



U. S. ARMY CORPS OF ENGINEERS
OMAHA DISTRICT

BOARHEAD FARMS NPL SITE

Upper Black Eddy, PA

Rapid Response

FINAL SCOPE OF WORK

CONTRACT NO. DACW45-94-D-0054
DELIVERY ORDER NO. 13

MAY 21, 1996

AR309025

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1. Introduction.

1.1. **General.** This Rapid Response project will consist of the installation of drinking water treatment systems on off-site individual residences and pre-design geotechnical and chemical sampling and analysis of on-site groundwater treatment plant and collector trench potential locations. This work will be followed at a later date, by modification to this delivery order, with the installation of the on-site groundwater treatment plant.

1.2. **Project Request.** The United States Environmental Protection Agency (USEPA), Region III has requested that the Omaha District Corps of Engineers execute a removal action at the Boarhead Farms NPL Site through the use of the Rapid Response Program. The Omaha District accepted this project and subsequently issued this Scope of Work (SOW) to IT Corporation specifying the plans, field work and necessary documentation required to complete this project as a delivery order to their Rapid Response Contract (DACW45-94-D-0054, Delivery Order 13). A construction act, cost reimbursable, fixed fee delivery order, with this SOW as an attachment, will be issued to IT Corporation to provide the contractual mechanism to complete this project.

1.3. **Location.** The Boarhead Farms NPL Site is located on Lonely Cottage Road in Bucks County, near Upper Black Eddy, Bridgeton Township, Pennsylvania. The site is located approximately two miles west of the Delaware River. Refer to APPENDIX A for site location maps.

1.4. **Site Description.** The Boarhead Farms NPL Site encompasses an 113 acre partially wooded property. Roughly one-third of the site is low-lying wetlands, and the surrounding area is somewhat hilly. A farmhouse, stables, and the former office of the Boarhead Corporation are located on the upland portion of the site, in a cleared area encompassing about one-fourth of the 113 acres. Two ponds are located in the central portion of the property; the larger pond is four acres and the smaller pond is one acre. Both ponds are manmade and fed by runoff from the site. The topography of the site slopes down and away from the ponds towards a wetlands area located in the southeastern portion of the property.

The area surrounding the site is primarily rural. Approximately 100 residences are located less than one mile from the site. The population of Bridgeton Township is about 1,800 people. Two junkyards border the site to the east and west.

1.5. **Site History.** Since 1970 the Boarhead Farms site has been owned by Manfred DeRewal and the Boarhead Corporation. Since that time there have been numerous Waste Discharge violations cited

by the Bucks County Dept. of Health which reported fish kills, improperly stored chemicals, releases of liquid chemicals sometimes in excess of 4,000 gallons, sewage sludge dumpings in excess of 6,000 pounds, and several violations of the Pennsylvania Clean Streams Law. Burial of drums was also documented in those reports. On one occasion in 1976, 34 people were evacuated from the surrounding area because of a sulfuric acid cloud release from a leaking tanker parked on the Boarhead property.

The Boarhead site was placed on the National Priorities List (NPL) in March of 1989. A Remedial Investigation/Feasibility Study (RI/FS) is currently being performed by an USEPA contractor, CH2M/HILL, to determine the nature and extent of contamination associated with the site.

In 1991 a magnetometer survey conducted as part of the RI/FS detected strong metal anomalies, an indicator of buried drums. USEPA determined that a Removal Action (RA) was warranted because of the potential threat posed by the buried hazardous substances. The RA began in June, 1992 and was completed September, 1993. Approximately 2,500 drums and 9,300 cubic yards of contaminated soils were excavated and disposed off-site during the RA. This included draining of the large pond and removal of a drum disposal pit in that pond.

Based on continued Removal Site Evaluation, the USEPA has determined that conditions at the site warrant the implementation of a non-time-critical removal action. Investigations by USEPA have determined that hazardous inorganic and organic contaminants are in the shallow ground water beneath the site at concentrations that exceed the Safe Drinking Water Act Maximum Contaminant Level by as much as four orders of magnitude. The threat exists for contaminants in groundwater to migrate through the aquifer and eventually contaminate the local drinking water supply. Groundwater is the sole source of drinking water for 100 residences less than one mile from the site.

A more detailed history of the site and the continuing investigation is included in many documents, including the Draft Remedial Investigation, which have been provided to the Contractor.

2. Tasks. The Contractor shall identify and adhere to all legally applicable or relevant and appropriate requirements (ARAR's) for this CERCLA Removal Action. The Contractor shall develop the plans, cost proposal and perform the work based on the following tasks:

2.1. Task 1 - Site Visit. The site was visited initially on January 24, 1995 by personnel from the USEPA, the U.S. Army Corps of Engineers (USACE), and IT Corporation to discuss the removal project. Refer to APPENDIX B - SITE VISIT ATTENDEES for a list of participants. Additional site visits have occurred by personnel from USACE and the Contractor since that time to further assess the site. The Contractor shall be reimbursed for costs associated with these site visits.

2.2. Task 2 - Project Work Plan Development. The Contractor shall prepare the project work plan. Portions of the plan are discussed below. This plan shall include a detailed discussion of the technical approach the Contractor plans to use to implement the requirements specified herein and in accordance with Contract Number DACW45-94-D-0054 and the negotiated Advanced Agreements to this contract. The plan must be reviewed and approved by USACE and USEPA prior to commencement of the work. Refer to SECTION 4 - "REVISIONS AND ADDENDA" for details on how to revise the project plan. The Contractor shall prepare the following sections to the project work plan:

2.2.1. Chemical Sampling and Analysis Plan (CSAP). The Contractor shall prepare a project specific CSAP in accordance with the requirements specified in APPENDIX C - CHEMISTRY INSTRUCTIONS.

2.2.2. Site Safety and Health Plan (SSHP). The Contractor shall prepare a project specific SSHP in accordance with the requirements specified in APPENDIX D - HEALTH AND SAFETY INSTRUCTIONS. An attempt shall be made to formulate the SSHP in it's initial writing to include the planned work of installing the on-site groundwater treatment plant and associated trenchwork planned as future work to this delivery order. This will allow minor amendments to this original SSHP.

2.2.3. Site-Specific Advanced Agreements (SSAA). The Contractor shall specify relevant Site-Specific Advanced Agreements. This document shall be included in the Cost Proposal to be negotiated and agreed upon by the Government and the Contractor. The cost associated with developing and negotiating the Site-Specific Advanced Agreements is not cost reimbursable. The negotiated SSAA's will be included in this SOW in APPENDIX J.

2.2.4. Work Plan (WP). The Contractor shall prepare a WP which discusses each specific task required by this Scope of Work (SOW) and explains how the Contractor plans to implement its resources to fulfill all the requirements of this SOW. A schedule shall be developed and included in the WP that presents the length of the individual tasks, interrelationship between tasks and other key milestones. The WP shall discuss permits, licenses, and certificates required for this project. The Contractor shall be responsible for assuring that all work performed during the execution of this delivery order are executed in accordance with all legally applicable or appropriate and relevant requirements (ARAR's) and in accordance with the Final Work Plan. The WP shall contain a section outlining key personnel (including their resumes) to be used on the project and their responsibilities. Key personnel shall be defined as all salaried professionals (both on-site and home office), the site supervisor, and any wage grade personnel key to the execution of the delivery order. The Contractor shall notify the USACE Contracting Officer in writing of

any changes in key personnel during the course of the execution of this delivery order within 24 hours of such change.

2.2.5. Cost Proposal. The Contractor shall develop and submit the cost proposal by the date stated in SECTION 11 - SCHEDULE. The Contractor shall not be reimbursed for expenditures incurred during the Cost Proposal's preparation and negotiation. The Delivery Order Cost Proposal shall be prepared based on this Scope of Work. The Cost Proposal shall provide a time-phased breakdown for each "TASK" based on Direct Costs including labor, equipment, materials, subcontracts, and indirect costs including overhead and G&A expenses. The applicable revised Davis-Bacon Wage rates to be used for this project are contained in APPENDIX H. Tax information to be used as determined by USACE is included in this Scope of Work in APPENDIX G - SALES AND USE TAX. At a minimum, for subcontracts greater than \$10,000, the Contractor shall provide three independent quotes and justification of selection. In addition, the Contractor shall submit three independent bid quotes for lodging to be used during on site activities.

2.3. Task 3 - Mobe/Demobe.

2.3.1. Mobilization. The Contractor shall mobilize all necessary equipment, personnel and materials to the project site needed to successfully complete the requirements of this SOW and other contract documents. The Contractor shall specify the equipment, personnel, material and their respective location from which mobilization will occur and anticipated travel time in the WP.

2.3.2. Demobilization. The Contractor shall demobilize all Contractor personnel, equipment and unused materials from the project site once all field work has been completed. The Contractor shall assume that a demobilization is required at the end of the work described in this Scope of Work is completed.

2.4. Task 4 - Site Preparation. The Contractor shall obtain all necessary permits and licenses connected with this project. The Contractor shall provide for site utilities and site offices as needed to safely and efficiently execute the project. Personnel and equipment decontamination stations shall be constructed and operated by the Contractor. The location and details of the personnel and equipment decontamination stations shall be provided in the WP.

2.5. Task 5 - Pre-Design Sampling and Analytical. The Contractor shall perform the drilling and sampling activities represented in APPENDIX K, Geotechnical Analysis Specifications; APPENDIX L, Boring Logs of On-site Monitoring Wells; APPENDIX C, Chemistry Instructions. The geotechnical and chemical sampling and analysis along the proposed collector trench alignment and

treatment building location(s) are needed for collected trench and building foundation design and siting purposes.

2.5.1 Magnetometer Survey. The Contractor will be required to perform magnetometer surveys of the potential foundation sites and along the planned trench alignment in advance of geotechnical and chemical sampling. The equipment provided for this task shall be able to perform the sweep, collect the data and present it digitally and visually to field personnel within a few hours so field decisions can readily be made about potential drilling/sampling sites. A person qualified in the use of the magnetometer equipment and interpretation of the digital displays must be present and operating the equipment. Drilling/sampling points may be relocated to avoid suspicious anomalies discovered during the survey. Anomalies of concern will be marked on the ground surface for future topographical survey and on field sketches for future investigation. See APPENDIX K, Geotechnical Sampling and Analysis Specifications, for additional guidance on the magnetometer survey task.

There are numerous 55-gallon steel drums containing drill cuttings and well purge water staged near the primary proposed building location. The Contractor shall devise a means of performing the magnetometer sweep, geotechnical and chemical sampling to avoid interference from these drums.

2.5.2 Sampling and Analytical. The Contractor shall provide all labor, equipment and supplies necessary for the pre-design sampling activities. The Contractor shall obtain geotechnical and chemical samples under two potential foundation locations to be selected on-site by USACE. For this task there will be a total of eight (8) borings, four (4) under each of the two potential foundation sites. The Contractor shall obtain geotechnical and chemical samples along a planned collection trench alignment as delineated in the attached appendices and potential additional sample locations as directed on-site by USACE. For this task eight (8) borings are planned along the trench alignment. It may be determined in the field that additional borings will be required along the trench alignment for which unit rates shall already be established.

All drilling for the samples shall proceed to refusal, which is estimated to be eight (8) foot depth, but could vary from point to point. Selected drilling equipment shall be capable of performing the tasks specified. Boring logs of nearby monitoring wells (APPENDIX L) are provided as guidance for potential subsurface conditions. Actual subsurface conditions could vary from point to point. The site is sloped and could be muddy this time of year.

Stainless steel split spoons are required for the original boring locations only for chemical sampling purposes. An adequate number of split spoons sets shall be provided to avoid delays while decontaminating drilling and sampling equipment before relocating to the next boring location. Shelby tubes do not necessarily need

to be stainless steel. ~~Geotechnical samples do not necessarily need to be taken with stainless steel sampling equipment.~~

Complete decontamination of drilling and sampling tools is required before relocating to the next boring location. The decontamination procedures are specified in APPENDIX C, Chemistry Instructions. Decontamination fluids may be placed on the ground surface near the boring.

Unit prices shall be established for at least, but not limited to, the following items:

- Mobilization and Demobilization to and from the site
- Price per additional foot, drilling/standard penetration test/split spoon sampling
- Price for rig setup to perform drilling, standard penetration test and split spoon samples at the unit rate above. This unit rate shall include the cost of decontaminating the drilling and sampling tools and equipment per APPENDIX C, Chemistry Instructions.
- Price per additional geotechnical Shelby tube sample

Final subcontract price will be increased or decreased based on these unit rates and the actual quantities or units of work performed. There will be no minimum subcontract quantity/price.

The boring points will be staked in the field. The Contractor shall provide the wood stakes.

2.6. Task 6 - Residential Wells Treatment Systems. The Contractor shall provide potable water treatment systems in sixteen residences to meet the treatment requirements of APPENDIX M, Specifications for Residential Well Treatment Systems; APPENDIX C, Chemistry Instructions. The Contractor shall coordinate and acquire all vendor proposals which meet the specification requirements. The Contractor/Vendors shall be responsible for surveying residents/owners for any additional information or data required for correct sizing of the equipment to be proposed. An initial contact by USEPA should have already been made so that residents/owners will be expecting questioning and site visits by the Contractor/Vendor. An attempt shall be made to use identically sized system components. It is preferred that no more than two different sizes of any system component be used for system standardization and ease of component changeouts.

2.6.1 System Operation and Maintenance. The systems shall be operated and maintained for a period of up to one year from installation. The operation and maintenance (O&M) requirements, resident training, and O&M manuals shall be in accordance with APPENDIX M, Specifications for Residential Well Treatment Systems and APPENDIX C, Chemistry Instructions. O&M booklets/manuals must be prepared for each resident. A summarized version of the O&M manuals shall be provided to the USACE and USEPA in the Project Final Report, if feasible.

2.7. **Task 7 - Final Project Report.** The Contractor shall submit a Draft Final Report within three weeks of completion of the on-site work accomplished for this delivery order and submit a Final Report once all comments to the Draft Final Report has been satisfied and certificates of disposal have been received for all wastes disposed of. Refer to SECTION 3.5 - FINAL REPORT for specific requirements for the Final Report. There will be no requirement for a Final Report at the completion of the work described in this initial SOW. The Final Report will be required at the culmination of the entire project and will be requested by modification to this Delivery Order. The Final Report will eventually include the work described by this SOW and all work performed under this Delivery Order.

3. **Submittals.** Documents submitted in performance of this Delivery Order shall be prepared on commercial grade bond paper. Documents shall be mailed via a carrier service that will provide overnight service, such as Express Mail, unless otherwise noted on APPENDIX F - SUBMITTAL REGISTER. The Contractor shall check one week prior to the submittal date for changes to APPENDIX F with the U. S. Army Corps of Engineers Project Engineer USACE-PE. The Contractor shall prepare and submit the following documents.

3.1. **Draft Project Work Plans.** Submit the following documents by the date shown in SECTION 11 - SCHEDULE and in accordance with APPENDIX F. All work plans shall be submitted as one document.

3.1.1. Draft Site Safety and Health Plan (SSHP).

3.1.2. Draft Contractor Sampling and Analytical Plan (CSAP).

3.1.3. Draft Work Plan

3.1.4. Cost Proposal

3.1.5. Site-Specific Advanced Agreements (SSAA).

3.1.6. OHM Corporation Literature/Brochure

3.2. **Final Project Work Plans.** Upon conclusion of negotiations, the Contractor shall submit the Final Project Work Plans which shall incorporate all the above work plans, review comments, and corrections from the negotiation within 5 days upon conclusion of negotiations, or as otherwise determined during negotiations. Procedures for revisions are discussed in paragraph, "REVISIONS AND ADDENDA."

3.3. **Daily Submittals.** Daily Submittals shall be submitted to the COE on-site representative at the close of business, daily. All daily Submittals shall be available for electronic

transmittal to the Omaha District Offices at the close of business, daily. Daily Submittals include:

3.3.1. **Rapid Response Quality Control Daily Report.** This form is provided in APPENDIX I - PROJECT FORMS.

3.3.2. **Rapid Response Daily Work Order.** This form is provided in APPENDIX I - PROJECT FORMS.

3.4. **Weekly Status Report.** The Contractor shall submit a weekly progress report no later than 10:00 A.M. Central Standard Time the following Tuesday after the week being reported on. The reports shall be telefaxed to the locations specified in APPENDIX E - SUBMITTAL REGISTER and then a hard copy of the report shall be sent via regular mail. The Weekly Status Report shall be transmitted weekly from delivery order award until demobilization. At that time the report shall be transmitted bi-weekly until final payment is made. The Weekly Status will include the following information:

3.4.1. Project name.

3.4.2. Date of report.

3.4.3. Name, title, telephone number, telefax number, address, and company name of the person completing the report.

3.4.4. Summary of work performed for the project during the report period, both on site and off site.

3.4.5. Explanation of any deviations from the scope of work and/or the Work Plan (including modifications and schedule slippage).

3.4.6. Discussion of all problems encountered.

3.4.7. Recommendations.

3.4.8. Key personnel changes.

3.4.9. Work anticipated to be performed the following week.

3.4.10. Percent of field work complete.

3.4.11. Percent of project complete.

3.4.12. Conversation records with regulatory agencies.

3.4.13. Tabulated waste handling information including samples taken, results, transportation plans, disposal facility, etc; if applicable.

3.4.14. Submittal of Hazardous Waste Manifests, Waste Profile Sheets, and Land Disposal Restriction forms that were signed and submitted to the laboratories, disposal facilities or transporters during the week.

3.5. Final Report. N/A at this time for the work described in this SOW. Draft and Final copies of the Project Report shall be submitted. While all Submittals should be error-free, an extra effort shall be made to provide an error-free Final Project Report. The Draft Project Report shall be submitted three weeks after final demobilization for this project, or later if agreed to by the USACE-PE. The Project Report shall include (if applicable) but not be limited to:

3.5.1. Summary of Work Performed. Summary of work performed including, but not limited to:

3.5.1.1. Executive Summary summarizing what was accomplished, discussing major difficulties encountered during execution of the project, drawing conclusions on the effectiveness of the project, and making any recommendations to the government.

3.5.1.2. Narrative of the Scope of Work (including project objectives, mobilization and demobilization, site setup, site operations);

3.5.1.3. Safety;

3.5.1.4. Quality control;

3.5.1.5. Recommendation, lessons learned;

3.5.1.6. Conclusions;

3.5.1.7. Any other unique or special tasks performed or situations documented.

3.5.2. Supporting Data. The tabulation of criteria, data, circulations, etc., which are performed but not included in detail in the report shall be assembled as appendices. Criteria information provided by the Omaha District need not be reiterated, although it should be referenced as appropriate. The Appendices shall include but not be limited to:

3.5.2.1. Completed permits and verbal conversation records concerning any permitting.

3.5.2.2. Licenses.

3.5.2.3. Rapid Response Quality Control Daily Report.

Results.

3.5.2.4. Sampling and Analysis Documentation and

3.5.2.5. Chain-of-Custody Records.

3.5.2.6. Photo Documentation.

3.5.2.7. List of visitors.

3.5.2.8. Project Points of Contact address and phone (including Site Manager, T&D Contractors, Subcontractor names, USACE-PE, Fort Crook personnel, etc.).

3.5.2.9. Survey reports and backup notes.

3.5.2.10. Completed Verbal Conversation Records especially ones that either impact the Scope of Work, Cost Proposal, or Final Report.

3.5.2.11. Weekly reports.

3.5.2.12. Hazardous Waste Manifests, Waste Profile Sheets, shipping documents, Land Disposal Restriction Certification and Notification, Federal and State Annual and Biennial reports, TSCA Annual Reports, Certifications of Disposal and Exception Reports.

3.5.2.13. Finalized versions of the transportation and disposal and the analytical results summary tables.

3.6. **Partial Submittals.** Partial Submittals will not be accepted unless prior approval is given.

3.7. **Covers Letters.** A cover letter should accompany each document and indicate the project, project phase, the date comments are due, to whom comments are to be submitted, the date and location of the review conference, etc., as appropriate. (Note that, depending on the recipient, not all letters will contain the same information.) The contents of the cover letters should be coordinated with the USACE-PE prior to the submittal date. The cover letter shall not be bound into the document.

3.8. **Covers.** The report covers shall be durable binders which hold pages firmly while allowing easy removal, addition, or deletion of pages. A report title page shall identify the report title, the Corps of Engineers and the date.

3.9. **Category 1 Submittals.** Category 1 Submittals shall be submitted by the Contractor in accordance with APPENDIX E-SUBMITTAL REGISTER. A cover letter shall accompany the submitted materials. The Category 1 Submittal shall be approved/disapproved by the Government within ten (10) working days of receipt from the

Contractor (excluding delivery time). The following Category 1 Submittals are required for this delivery order:

3.9.1. Magnetometer Survey Plan. This would include the technical methods and equipment to be used to implement the requirements of this SOW. This will not be a document separate from the main body of the Work Plans.

3.9.2. Residential Wells Vendor Bid Proposals. Reference APPENDIX M, Specifications for Residential Well Treatment Systems for requirements.

3.9.3. Residential Wells Sampling Results. Reference APPENDIX M, Specifications for Residential Well Treatment Systems and APPENDIX C, Chemistry Instructions, for requirements.

4. **Revisions and Addenda.** Review comments issued prior to Government approval shall be incorporated by revising and reissuing affected pages. If major revisions are necessary, the entire Plan shall be resubmitted. Minor changes affecting only a few pages may be made by addenda sheets. The affected pages shall have the revision number and date of correction on the bottom-right corner of the page.

Any changes to the project work plan shall be accompanied by a cover sheet with a list of pages that have been revised. The revised pages that the Contractor issues shall cover any additions or changes to the plans or reports. The addendum for the project plan shall be issued prior to the commencement of work for that phase.

5. **Project Management.** The Contractor shall assign an employee who will serve as the Project Manager (PM). This individual will oversee the coordination of the entire project, administer all instructions from the USACE-PE and obtain answers to all questions from the USACE-PE during and after the work. The PM will be named by the Contractor and approved by the USACE in accordance with the Advance Agreement No. 8 - Key Personnel.

6. **Security.** The Contractor shall maintain and secure the equipment and site offices during all site operations. Any open excavation shall be clearly marked and caution lights utilized if along the right-of-way.

7. **Review of Progress and Technical Adequacy.** At any appropriate time, representatives of the Contracting Officer (CO) may review the progress and technical adequacy of the Contractor's work. Such

review shall not relieve the Contractor from performing all contract requirements, except as may be waived by written instructions. The Contractor, under this contract, will interpose no objection nor restriction to the Contracting Officer's designation of a Contractor for the purpose of reviewing the adequacy and corrections of the work performed under this contract.

8. Conference Notes and Annotated Comments.

8.1. Conference Notes. The Contractor shall be responsible for taking notes and preparing the reports of all conferences, if required. Conference notes shall be prepared in typed form and the original furnished this office (within seven (7) work days after date of conference) for concurrence and distribution to all attendees. This report shall include the following items as a minimum.

8.1.1. The date and place the conference was held with a list of attendees. The roster of attendees shall include name, organization, and telephone number.

8.1.2. Comments made during the conference, decisions affecting criteria changes, must be recorded in the basic conference notes. Any augmentation of written comments should be documented by the conference notes.

8.2. Annotated Comments. Written comments presented by the reviewers of the project Submittals shall be formally addressed and annotated by the Contractor. Annotated comment action shall be "A" for an Approved comment, "D" for a Disapproved comment, "W" for a comment that has been Withdrawn, and "E" for a comment that has an Exception noted. In addition, brief written responses to comments shall be added where appropriate. Annotated comments shall be submitted as an attachment to the cover letter transmitting the revised submittal or included in an appendix to the revised submittal.

9. Applicable Publications. Work performed shall be consistent with this SOW and with the following guidelines and references and in compliance with all applicable regulations and standards including, but not limited to, those listed below. In the case that these requirements are conflicting, the one which offers the greatest protection shall be followed.

9.1. U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1, issued October 1992.

10. Attached Requirements. All field, laboratory, and reporting requirements associated with this delivery order shall be completed

in accordance with the appendices to this SOW. If conflicts in specifications or methodology exist between the attached requirements, the Contractor shall immediately notify the USACE-PE for clarification. Conflicts between this SOW and those desired by the Contractor shall be brought to the attention of the USACE-PE for clarification and approval.

11. Schedule.

Initial Site Visit	24 Jan 1995
Scope of Work Issued	23 Apr 1996
Cost Proposal and Work Plans Submitted	03 May 1996
Negotiated	20 May 1996
Final Scope of Services Issued	22 May 1996
Revised Cost Proposal and Work Plans Submitted	21 May 1996 & 28 May 1996
Award Delivery Order	24 May 1996
Start Field Work	03 Jun 1996

LIST OF APPENDICES

- Appendix A - Site Plans
- Appendix B - Site Visit Attendees
- Appendix C - Chemistry Instructions
- Appendix D - Health and Safety Instructions
- Appendix E - Submittal Register
- Appendix F - not used
- Appendix G - Sales and Use Tax
- Appendix H - Davis-Bacon Wage Rates
- Appendix I - Project Forms
- Appendix J - Site Specific Advanced Agreements
- Appendix K - Geotechnical Sampling and Analysis Specifications
- Appendix L - Monitoring Well Boring Logs
- Appendix M - Specifications for Residential Well Treatment Systems

AR309041

APPENDIX A

SITE PLANS

AR309042

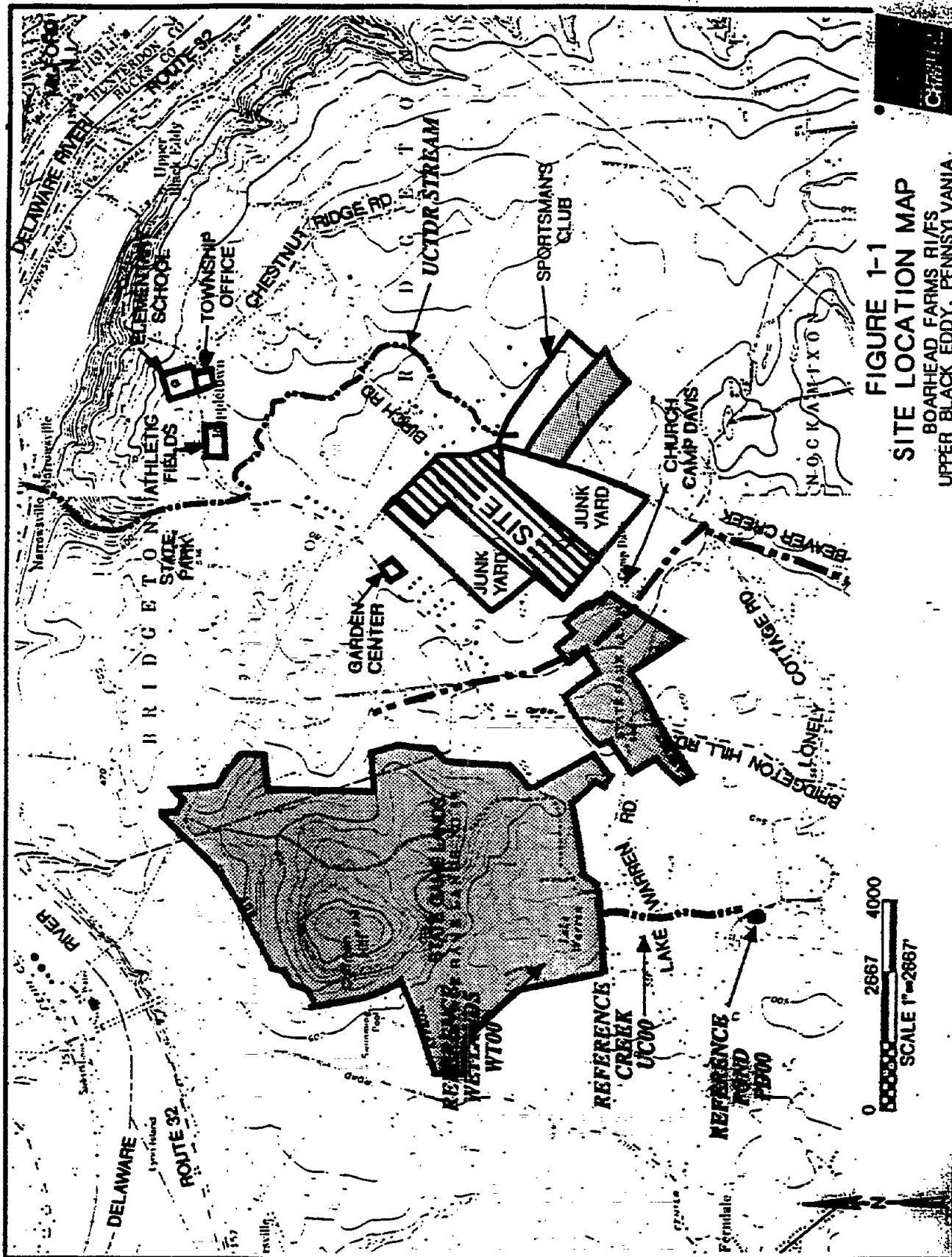


FIGURE 1-1
SITE LOCATION MAP
 BOARHEAD FARMS RI/FS
 UPPER BLACK EDDY, PENNSYLVANIA

PH163148 RLRI

AR309043

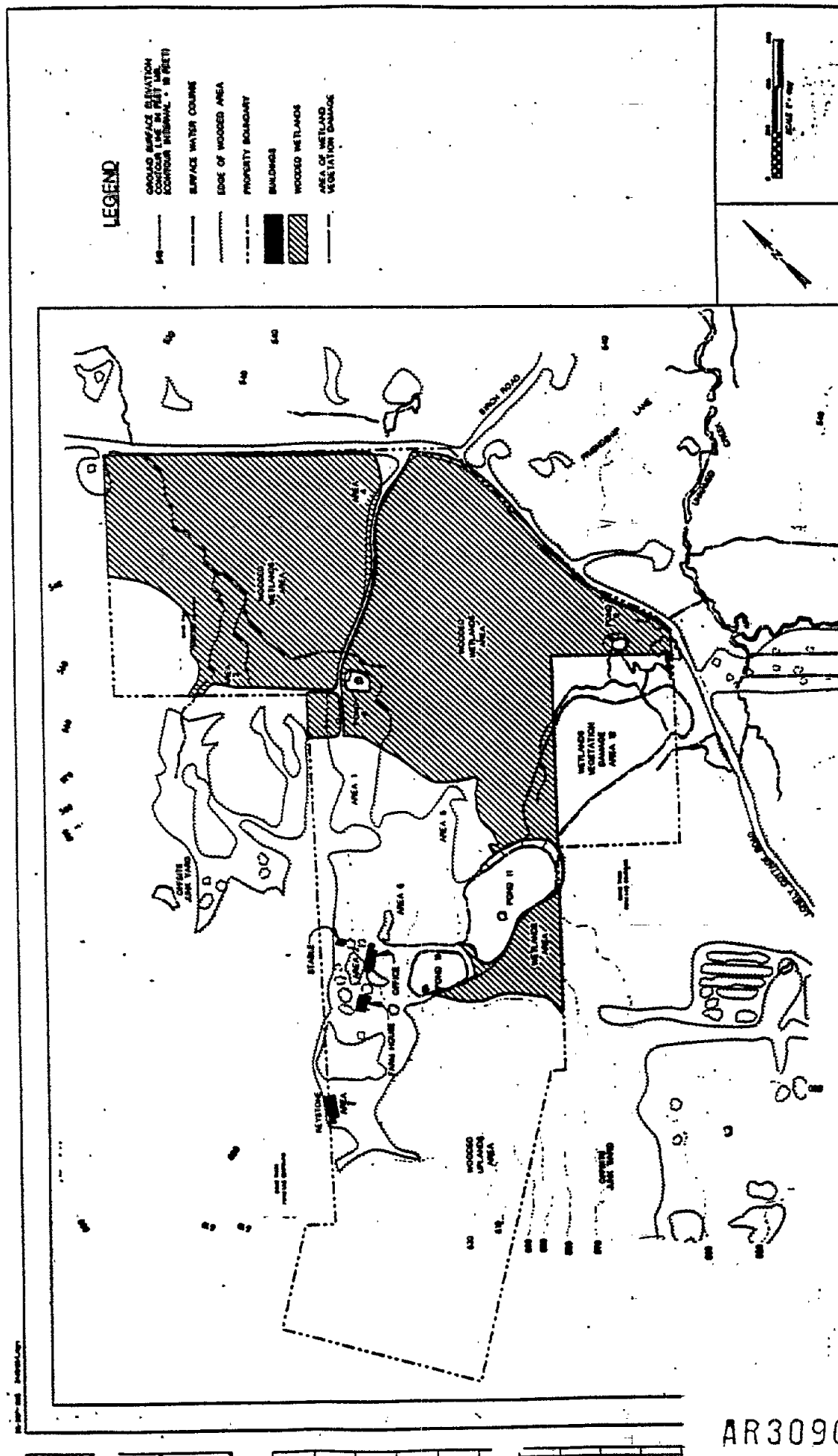
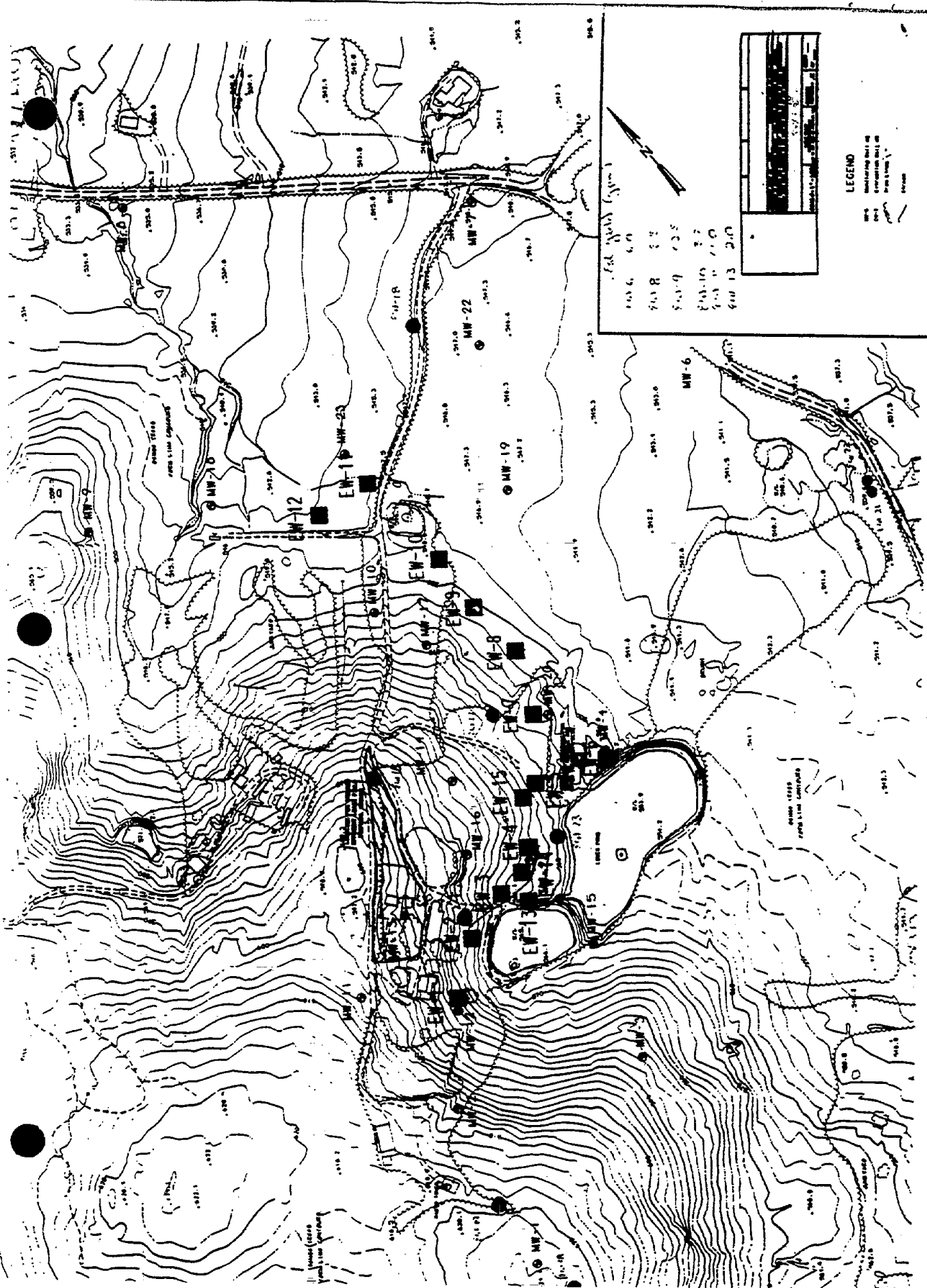
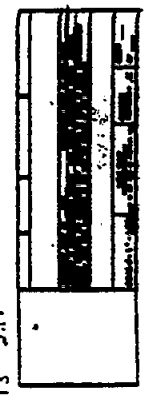


FIGURE 1-2
SITE FEATURES
BOARDS OF FARM RIVER
UPPER BLACK EIGHT, PENNSYLVANIA

AR309044



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 300 9 9.0
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 500 11 11.0
 600 12 12.0



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AR309045

HOW TO GET TO BOARHEAD FARMS

- Go North from Philadelphia on Hwy 611 from I-276 (PA Turnpike)
- After entering the town of Revere, PA and passing the Revere Post Office, Hwy 611 will curve to the West
 - Take Beaver Run Rd. straight ahead where 611 curves West after passing the Revere Post Office
- Turn left on Marienstein Rd.
- Marienstein Rd. becomes Bridgeton Rd. after some distance
- Take a right on the SECOND Lonely Cottage Rd. which will lead you to the Boarhead Farms site
- See the attached location map

AR309046

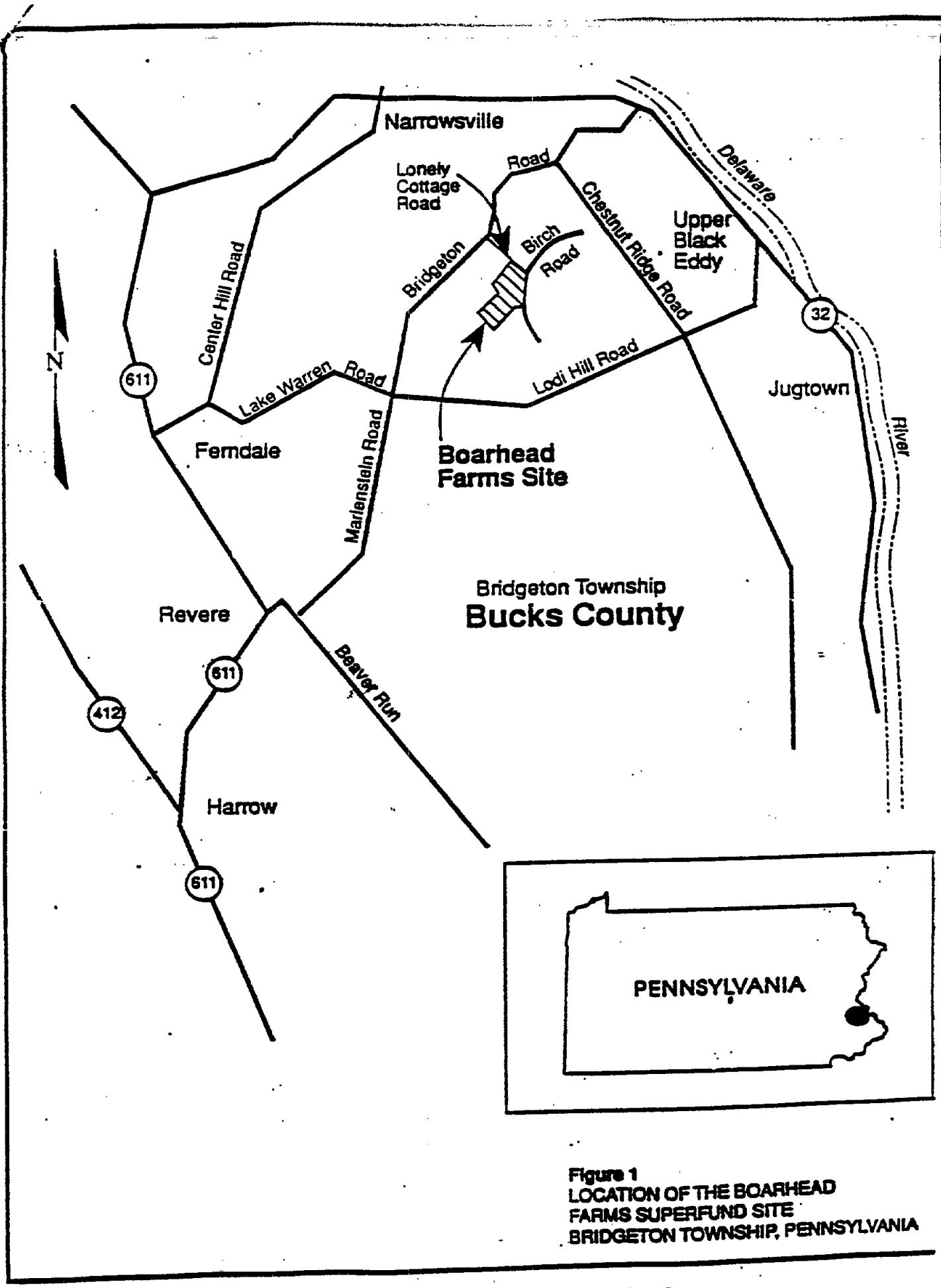


Figure 1
LOCATION OF THE BOARHEAD
FARMS SUPERFUND SITE
BRIDGETON TOWNSHIP, PENNSYLVANIA

APPENDIX B
SITE VISIT ATTENDEES

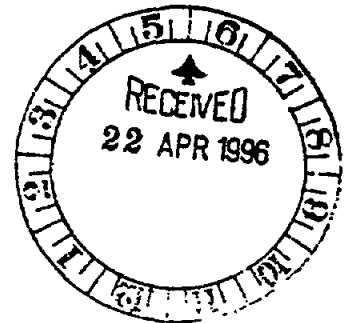
AR309048



April 15, 1996

Project # 761201

Mr. Wally Shaheen
U.S. Army Corps of Engineers
Fort Crook Area
P.O. Box 13287
Offutt AFB, NE 68113



Re: Contract No. DACW45-94-D-0054, Delivery Order No. 13
Boarhead Farms Superfund Project

Dear Mr. Shaheen:

On Wednesday, March 20, U.S. Army Corps of Engineers (USACE) and IT Corporation (IT) met with the U.S. Environmental Protection Agency (USEPA) at their offices in Philadelphia, Pennsylvania. Mr. Wally Shaheen, Mr. Greg Wagner and Mr. Denzie White represented the USACE Omaha Rapid Response Section, Mr. Tom Mathison and Mr. Philip Stearns represented IT and Mr. Jim Harper, Mr. Harry Harbold and Mr. Bruce Rondell represented the USEPA. The purpose of this meeting was to discuss the technical approach to be taken to remediate the Boarhead Farm site and the schedule of the remedial activities.

After all parties were introduced, Mr. Harper discussed his expectations with regard to the execution of the project and the documentation required. All documents must be submitted with the USACE referenced on the cover and submitted in Word Perfect 6.0 format. All drawings are to be submitted on disc in Intergraph format.

The following specific aspects of the project were discussed in detail. The highlights of each facet are summarized below.

Residential Well Treatment Systems:

- The specific criteria for treatment levels, both influent and effluent, must be determined in order for the treatment units to be procured. Choosing these design criteria will be done by the USACE.
- Each homeowner should be notified of the intent to install a treatment system on their water line and be kept informed of the progress of the installation.

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William Penn Plaza • 2790 Mossdale Boulevard • Monroeville, Pennsylvania 15146-2792 • 412-372-7701

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Mr. W. Shaheen
April 15, 1996
Page 2.

- The home which corresponds to RW28 has been taken over by a mortgage company who will have to be notified of the proposed treatment activities.
- Additional sampling of the residential wells should be kept to a minimum.
- The house exhibiting the worst case of contamination prior to the installation of the treatment units will be evaluated to determine the performance of the treatment units.
- Once the units are installed and operational, it may be more cost effective to change out the carbon units (or other treatment media) rather than sample each one to determine the extent of breakthrough.
- Neighboring residences seem to fall into two size categories that may influence water usage at the residence and the ability to place a treatment system inside the residence. These categories are larger multi-room houses with basements and smaller mobile homes with no basement.

On-site Treatment System:

- The onsite collection and treatment system will consist of a collection trench, well head piping system and a complete treatment system contained within a concrete block building.
- Location of extraction wells on site drawings were not surveyed. They were placed using visual approximations.
- The 8 to 12 wells producing the highest flow will be utilized to extract groundwater.
- It may be necessary to hydrofrac the wells to enhance the flow of groundwater within the rock layer beneath the site. This may be able to be performed at a time after the system is in place and operational.
- The treatment system will most likely consist of a combination of filtration, carbon adsorption and ion exchange.
- It is possible to supplement flow to the treatment system utilizing water from the ponds.

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Mr. W. Shaheen
March 22, 1996
Page 3.

- Treated water will be discharged to the surface and allowed to run through the wetlands. This surface discharge will not require an NPDES permit. However, all substantive requirements of the PADEP ARARS must be met prior to the water being released.
- The design of the collection and treatment system is to be done by the USACE.

Removal of "hot spot" soils:

- Several areas of soil exhibiting high levels of TCE and other contaminants are to be removed during the onsite work of the project. These soils are to be disposed of offsite or possibly treated onsite.

Overall Remediation of the Site:

- The final remediation of the site may include capping areas of the site or excavation and removal of the contaminated soils.
- The final remediation technology selected may have an impact on the proposed groundwater treatment system to be installed under this action. The USACE will be kept informed of the alternatives being considered.
- The groundwater treatment system to be installed may need to be expanded in the future to accommodate additional wells.

Miscellaneous Items Discussed:

- Because this is a Superfund Site, permits may not need to be obtained, other than local building permits for the treatment building, during the initial phase of work.
- It was suggested that electrical equipment used at the site be designed for single-phase power, as three-phase power may be expensive and difficult to obtain in a timely manner. However, all options and long-term power requirements will be investigated prior to completion of the final design.
- Mr. Jim Harper will check with CH2M Hill as to the status of the disposal of the drums which are currently staged at the site.

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Mr. W. Shaheen
April 15, 1996
Page 4.

A copy of the approval letter for the removal action and the analytical results from the November sampling event of the monitoring wells at the site were distributed to the USACE and IT.

Upon completion of the above discussions, the meeting was adjourned.

Should you have any questions or comments regarding this summary, please contact me at (412) 858-3303.

Sincerely,



Thomas P. Mathison
Project Manager

TPM:nml

AR309052

FORT CROOK AREA OFFICE

RECORD OF ATTENDANCE

DATE 1/24/95

Boarhead Farms NPL Site
CONTRACT TITLE

CONTRACT NO.

[illegible]

AR309053

APPENDIX C
CHEMISTRY INSTRUCTIONS

AR309054

SCOPE OF SERVICES
FOR
BOARSHEAD SUPERFUND SITE
BUCKS COUNTY, PA

CHEMISTRY INSTRUCTIONS
April 23, 1996

1 Sampling and Analysis Plan. This appendix describes the Contractor's responsibilities with respect to the sampling, analysis, and associated documentation entailed in this work effort. The Contractor shall be responsible for the development and implementation (upon USACE approval) of the Sampling and Analysis Plan (SAP). The SAP is intended to be site specific guidance for the project field team for the required sampling and associated activities. The SAP shall detail all field activities, data quality objectives, and field documentation related to the chemical and geophysical data. The SAP shall include a list of equipment to be taken to the field, details of the sampling locations and methodologies including field screening methods to be employed, decontamination procedures, quality control procedures and criteria, sample custody and shipments information, analytical methods, and all additional items described within this appendix and other portions of this scope. Number and types of samples and bottle/preservation requirements shall be presented in tabular form. The SAP shall detail all quality assurance/control procedures to be taken in the field and laboratory as well as all information regarding documentation, validation, and evaluation of the analytical results. All of the above shall be performed in a manner consistent with the most recent EPA guidelines, the USACE guidance document ER 1110-1-263 Appendix E, and any applicable Commonwealth of Pennsylvania requirements.

2 Sampling Requirements. The following are the anticipated sampling requirements for this project.

2.1 Soil Samples. Soil samples for chemical analysis shall be collected for each location specified in the Geology and Geotechnical portions of this scope of services. These samples, to be used for determination of anticipated levels of PPE for the future construction work and to ensure that the placement of all permanent structures will not be impacted by any potential future removal actions, shall be vertical composites taken from the unused portions of the Geotechnical samples, one per location. The volatile organic samples shall be collected from the portion of the boring exhibiting the highest PID or FID reading.

2.2 Residential Well and Tap Water. At the two designated monitoring residences, the Contractor shall sample the influents to the treatment systems and at the taps at initial installation, and at other times as specified in Appendix M, Section 7.1. The tap shall be flushed until the temperature stabilizes, reduced to a

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flow of approximately 500 ml/minute, and then the sample collected. If the tap is equipped with an aerator, it shall be removed prior to sample collection.

2.3 Treatment System Monitoring. The initial sampling shall be influent and effluent only. The subsequent monitoring shall include a sample between the carbon canisters as well and between other portions of the treatment train as appropriate. The sample between the carbon canisters shall be analyzed for volatile and semivolatile organics only. The samples for other portions of the treatment train shall be based on the type of treatment (e.g. metals analysis only for a metal treatment step; volatiles analysis only if an air stripper is used, hardness and metals analysis if water softening).

3 Decontamination.

3.1 Decontamination Procedures. It is anticipated that all sampling equipment shall be disposable, however, if non-dedicated sampling equipment is used, it shall be stainless steel, glass, or teflon sampling equipment and shall undergo decontamination procedures as follows:

3.1.1 Non-phosphate laboratory detergent wash and brushing to remove large particles;

3.1.2 A tap water rinse;

3.1.3 A double deionized water rinse.

3.2 Disposal of Liquids. All liquids generated during decontamination procedures shall be collected and disposed of in accordance with all applicable Commonwealth of Pennsylvania and Federal regulations.

4 Sample Handling, Preservatives, and Holding Times. The samples for off-site chemical analysis are to be placed in appropriately labeled sample containers, preservatives added (as required), enclosed within a plastic ziplock bag, and placed in a chilled (when required) cooler. Once the samples for the day are acquired, the required paperwork shall be completed, the cooler packed with fresh coolant (when required) and packing material, custody seals attached, the samples shall be shipped or delivered to the designated laboratory. Sample packaging, shipping, and chain-of-custody shall follow all applicable USEPA, USACE and Commonwealth of Pennsylvania guidelines, and shall be detailed in the SAP. USACE guidelines are outlined in the document Sample Handling Protocol for Low, Medium, and High Concentration Samples of Hazardous Waste, (ER 1110-1-263, Appendix E, 1 October 1990). No sample shall be held on site for more than twenty-four (24) hours.

5 Documentation. The system for identifying and tracking the samples shall be described, and shall include the recording of

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field data in permanently bound notebooks along with Daily Quality Control Reports. These shall be faxed to the USACE PE on a weekly basis or at the conclusion of each sampling event.

6 Sample Labels. Correct sample labeling and the corresponding notation of the sample identification numbers in the field logbook are necessary to prevent misidentification of samples and their eventual results. The SAP shall explicitly define the numbering system to such detail that sample results may be tracked to the corresponding field samples. Special care must be given to the numbering of the field duplicates as to keep them blind to the laboratory. All sample labels shall be filled out legibly with indelible ink, affixed to the sample bottle, and covered with clear tape. These labels are to include the following at a minimum:

- 6.1 Name/initials of the collector;
- 6.2 Date and time of collection;
- 6.3 Place of collection;
- 6.4 Sample ID number (must uniquely identify each sample in regard to project, station location, etc.);
- 6.5 Analysis required;
- 6.6 Preservatives added;
- 6.7 Designation between "grab" or "composite" samples.

7 Chain-of-Custody/Sample Shipment. Chain-of-Custody shall be maintained for all samples collected during this project. It is very important that the information on the Chain-of-Custody form match the information on the sample bottles. Chain-of-Custody forms shall be completed for every cooler, and shall be sealed in a zip-lock bag and taped to the inside of the lid of the cooler. A minimum of two signed custody seals will be required on the outside of the coolers, one on the front and one on the rear of the cooler both covered with clear tape. Chain-of-Custody procedures shall be in accordance with USACE Sample Handling Protocol and USEPA procedures. All samples shall be shipped via overnight delivery or hand delivered to the receiving laboratory. The Contractor shall define, in the SAP, the name, address, telephone number, and a POC at the laboratory which will be utilized for the analysis of the samples.

8 Analytical. The following analytical methods are recommended for the samples taken from the previously described areas. The methods to be used, along with appropriate digestion/extraction methods, must be specified in the SAP. These methods must be EPA-approved and consistent with any applicable Commonwealth of Pennsylvania requirements, including participation in Pennsylvania's Safe Drinking Water certification program (for the water samples only). These methods must be followed explicitly including all quality control procedures detailed in the respective methods unless otherwise authorized by the Corps of Engineers.

8.1 Soil Samples

8.1.1 Volatile Organic Compound

SW-846 8260

8.1.2 Semivolatile Organics

SW-846 8270

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8.1.3 Target Analyte Metals SW-846 6010 and 7000's
 8.1.4 Pesticides/PCB's SW-846 8080
 8.1.5 Cyanide SW-846 9010
 8.1.6 Organophosphate Pesticides SW-846 8140
 8.1.7 Organochlorine Herbicides SW-846 8150

8.2 Residential Wells

8.2.1 Volatile Organic Compounds 524.2
 8.2.2 Semivolatile Organics 525.1
 8.2.3 Target Analyte Metals 204.2, 245.x, 270.2, 279.2
 8.2.4 Pesticides/PCB's 508
 8.2.5 Cyanide 335.x
 8.2.6 Nitrogen and Phosphorous Pesticides* 507
 8.2.7 Chlorinated Acids* 515.1
 8.2.8 Nitrate, Nitrite, Chloride, Sulfate 300.0
 8.2.9 TDS 160.1

* Initial sampling on influent only, subsequent analysis based on initial influent results.

8.3 Treatment Process Monitoring

8.3.1 Volatile Organic Compounds 524.2
 8.3.2 Semivolatile Organics 525.1
 8.3.3 Other analysis, as appropriate

Table 1
 Water Sampling and Analysis Requirement Summary

Parameter Method	VOC 524.2	SVOC 525.1	Metal Var.	Pest. 508	Herb. 515.1	Pest. 507	Anion 300.0	TDS 160.1	CN 335.C
Initial									
Influent	X	X	X	X	X	X	X	X	X
Effluent	X	X	X	X	X	X	X	X	X
Subsequent									
Influent	X	X	X	X	X ²	X ²	X	X	X ²
Between Carbons ¹	X	X							
Effluent	X	X	X	X	X ²	X ²	X	X	X ²

¹ Additional analysis and locations may be required, see paragraph 2.3.

² Only if detected in initial sampling

9 Method Detection Limits. Detection limits for the analyses shall be according to applicable EPA methodologies unless otherwise driven by project needs. Detection limits shall be summarized in the SAP. Data reports shall also list specific detection limits for constituents analyzed.

10 Calibration Procedures/Frequency. Calibration of the analytical instrumentation to be used for this project is to be outlined in the SAP. Calibration requirements and the frequency associated with them shall be in accordance with the individual methods.

11 Quality Control. The Contractor shall perform the quality control procedures as described in the reference methods. This includes reagent blanks, laboratory replicates, matrix spikes and

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duplicates, and surrogate standards. If acceptable windows are not met in the first analytical run, the laboratory shall be responsible to rerun the sample to prove matrix effects at no expense to the government. The Contractor shall summarize windows of acceptability for spikes/surrogates and actions to be taken in the event of out-of-control situations in the SAP. The SAP shall describe in detail the laboratory QC procedures including specific compounds and their performance criteria.

12 Laboratory Turn Around Time. The Contractor shall require no longer than a 30 day turn around time (from receipt of samples) for the analytical results from the laboratory.

13 QA/QC Problems. All QA/QC problems in the field or in the laboratory shall be reported immediately to the USACE on-site Construction Representative and to the USACE Project Engineer within twenty-four (24) hours.

14 Data Validation and Evaluation. Data validation and evaluation for this project shall be performed by the Contractor. A plan for this activity shall be proposed in the required SAP. The data shall not require the full data validation package in accordance with the National Functional Guidelines for the Evaluation of Organic and Inorganic data.

15 Contract Laboratory Validation. The Contractor shall notify the USACE Project Chemist as soon as the laboratory is identified. Any laboratory performing chemical analyses for this project shall be validated by the USACE Missouri River Division (MRD) prior to beginning any of the project analyses. Laboratories shall be validated for each environmental matrix and each specific analytical method to be employed under the terms of this contract. If the Contractor selects a laboratory which has a current (i.e., obtained within the previous 12 months) validation for all analytes and matrices specific to this project, additional evaluation will not be necessary. If the Contractor selects a laboratory which does not have a current validation, the laboratory shall be validated prior to approval of the SAP. Commercial laboratory validation procedures are outlined in Appendix C to ER 1110-1-263. Samples may not be subcontracted to another laboratory without the advance approval of MRD and unless the second laboratory is validated for the parameters concerned. Additionally, the laboratory performing the drinking water analysis shall be certified by the Commonwealth of Pennsylvania for drinking water analysis for all parameters concerned.

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APPENDIX D
HEALTH AND SAFETY INSTRUCTIONS

AR309060

**Appendix D - Health and Safety Scope of Work
Boarhead Farms Superfund NPL Site, Upper Black Eddy, PA**

1. General. The Rapid Response Contractor responsible for the tasks defined by this scope of work shall review all information provided and develop the necessary documents which contain the health and safety criteria, procedures, and practices sufficient to protect on-site personnel, the environment, and potential off-site receptors from the chemical and physical hazards particular to this site. The Contractor shall utilize the services of a Certified Industrial Hygienist (CIH) experienced in hazardous waste site operations to oversee the development and implementation of the health and safety documents required by this section. If the information made available is insufficient to allow the Contractor to develop these documents, a description of all additional information required shall be prepared and submitted to the Contracting Officer (CO).

2. Regulatory Requirements. All site investigation activities and health and safety documents required by this scope of work shall comply with and reflect the following regulations and appropriate guidance publications, as a minimum:

2.1 Federal Acquisition Regulation, F.A.R. Clause 52.236-13: Accident Prevention.

2.2 U.S. Army Corps of Engineers (USACE), Safety and Health Requirements Manual, EM 385-1-1 (October 1992).

2.3 Occupational Safety and Health Administration (OSHA) Construction Industry Standards, 29 CFR 1926, and General Industry Standards, 29 CFR 1910; especially 29 CFR 1926.65 - "Hazardous Waste Operations and Emergency Response", 29 CFR 1910.1000 - "Air Contaminants", and 29 CFR 1926.650-.652 - "Excavations".

2.4 NIOSH/OSHA/USCG/EPA, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities", October 1985.

2.5 Other applicable Federal, State, and local safety and health requirements.

3. Documents. The following health and safety documents are required to be developed under this scope of work. Avoid providing material of a general nature, not specifically related to this project or site. Information readily available in standard texts should be repeated only to the extent necessary to meet the requirements of this scope. The Safety and Health Program will contain general information required by the referenced OSHA standards and EM 385-1-1 which is applicable to all hazardous waste activity efforts performed by the contractor. The Site Safety and

Health Plan should be a brief document addressing only site-specific safety and health requirements and procedures based upon site-specific conditions. Duplication of the general information contained in the Safety and Health Program is unwanted.

3.1 Safety and Health Program. All contractors and their subcontractors performing on-site activities at hazardous waste sites are required by regulation to develop and maintain a written Safety and Health Program in compliance with OSHA standard 29 CFR 1926.65(b)(1) through (b)(4). Written certification that such a program has been prepared and implemented shall be submitted to the CO as a preface to the required Site Safety and Health Plan (SSHP). This program, including updates, shall be made available to the CO in its entirety upon request. Advanced Agreement # 19 under the Rapid Response Contract has fulfilled this requirement.

3.2 Contractor Site Safety and Health Plan (SSHP). The Site Safety and Health Plan required by 29 CFR 1926.65(b)(4) shall be prepared by the Contractor and submitted to the Contracting Officer for review and approval prior to the commencement of any on-site work activity to be performed by the Contractor and/or his subcontractors. This SSHP shall describe the health and safety procedures, practices, and equipment to be implemented and utilized in order to protect affected personnel from the potential hazards associated with the site-specific tasks to be performed. The level of detail provided in the SSHP shall be tailored to the type of work, complexity of operations to be accomplished, and hazards anticipated. It is anticipated that this project will involve the various tasks associated with environmental sampling, drilling, installation of residential carbon treatment units, and general construction. All topics required by OSHA standard 1926.65(b)(4), and those described below, shall be addressed in the SSHP. Where the use of a specific topic is not applicable to the project, provide a negative declaration to establish that adequate consideration was given the topic, and give a brief justification for its omission.

3.2.1 Site Description and Contamination Characterization. Describe the location, topography, and approximate size of each site, the on-site jobs/tasks to be performed, and the duration of planned site activities. Compile a complete list of the contaminants found or known to be present in site areas to be impacted by the work to be performed. Compilation of this listing shall be based on results of previous studies, or if not available, select the likely contaminants based on site history and prior site uses/activities. Include chemical names, concentration ranges, media in which found, applicable regulatory clean-up levels, locations on-site, and estimated quantities/volumes to be impacted by site work, if known.

3.2.2 Hazard/Risk Analysis. Identify the chemical,

H&S-2

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physical, biological, and safety hazards of concern for each site task and/or operation to be performed. Selection of chemicals as indicators of hazard shall be based on media concentrations, toxicity, volatility or potential for air entrainment at hazardous levels, and frequency of detection. Describe chemical and physical properties of selected contaminants, sources and pathways of employee exposures, anticipated on and off-site exposure level potentials, and regulatory (including Federal, State, and local) or recommended protective exposure standards. Specify and justify "action levels" based upon airborne exposure hazards and direct skin contact potentials for upgrades/downgrades in levels of personnel protection; for implementation of engineering and/or work practice controls; for emergency evacuation of on-site personnel; and for the prevention and/or minimization of public exposures to hazards created by site activities. Air monitoring/sampling shall be performed in accordance with Paragraph 3.2.8 : "Exposure Monitoring/Air Sampling Program" below, the resulting data compared with established "action levels", and appropriate corrective actions initiated as necessary.

3.2.3 Accident Prevention. The SSHP will serve as the Accident Prevention Plan (APP) and activity hazard analyses (phase plans), required by F.A.R. Clause 52.236-13, and Paragraphs 01.A.07 through 01.A.08 and Table 1-1 (pp. 3-5) of USACE EM 385-1-1 (1992). The APP shall be contained in the SSHP as a separate definable section, titled "Accident Prevention Plan". Therefore a separate APP is not necessary. The activity hazard analysis is an ongoing process from initiation of plan preparation through the implementation and completion of the field work. This is especially true under the Rapid Response Contracts. Therefore, the activity hazard analysis shall consist of two specific phases, the first of which shall be detailed in the SSHP submittal process to meet the intent of 29 CFR 1926.65 and paragraph 3.2, "Contractor Site Safety and Health Plan" of this section. The phase safety plans shall be outlined and developed to the full extent possible prior to SSHP submittal. Phase two of the activity hazard analysis (phase plans) as required by the APP shall be developed on-site by the Contractor's supervisory staff prior to beginning any specific activity and incorporated into the SSHP on an ongoing basis throughout the duration of the field activities. Any additional topics required by EM 385-1-1, but not specifically covered in Paragraph 3.2. of this scope of work, shall be addressed in the Accident Prevention section of the SSHP under the phase safety field development process. Daily safety and health inspections shall be conducted to determine if operations are being performed in accordance with the SSHP, USACE and OSHA regulations, and contract requirements. In the event of an accident/incident, the Contractor shall immediately notify the CO. Within two (2) working days of any reportable accident, the Contractor shall complete and submit to the CO an Accident Report on ENG Form 3394 in accordance with AR 385-40 and USACE Supplements to that regulation.

3.2.4 Staff Organization, Qualifications, and Responsibilities. Discuss the organizational structure, including lines of authority (chain of command), and overall responsibilities of the contractor and all subcontractors for site activities, including supervisor/employee relationships. Summarize the operational and health and safety responsibilities and qualifications of each key person identified. Specifically: (1) A Certified Industrial Hygienist (CIH) with experience in hazardous waste site operations shall be responsible for the development, implementation, and oversight of the Safety and Health Program and SSHP. The SSHP shall be signed and dated by the CIH prior to submittal; (2) A fully trained and experienced Site Safety and Health Officer (SSHO), responsible to the contractor and the CIH, may be delegated to implement and continually enforce the safety and health program and site-specific plan elements on-site; and (3) At least two persons certified in first aid/CPR by the Red Cross, or equivalent agency, shall be continuously present on-site during site operations.

3.2.5 Training. All personnel performing on-site activities shall have completed applicable training in accordance and compliance with 29 CFR 1926.65(e). In addition, site-specific training covering site hazards, procedures, and all contents of the approved SSHP shall be conducted by the SSHO for on-site employees and visitors prior to commencement of work or entering the site. The type, duration, and dates of all employee training performed shall be listed by employee name and certified in the SSHP.

3.2.6 Personal Protective Equipment (PPE). In accordance with 29 CFR 1926.65(g)(5), a written Personal Protective Equipment (PPE) program which addresses all the elements listed in that regulation, and which complies with respiratory protection program requirements of 29 CFR 1910.134 is to be included in the Safety and Health Program. Therefore, the SSHP shall detail the minimum PPE ensembles (including respirators) and specific materials from which the PPE components are constructed for each site-specific task/operation to be performed, based upon the hazard/risk analysis performed above. When preparing ppe ensembles for protection against highly toxic or mobile chemicals, list any pertinent material breakthrough times, as provided by the ppe manufacturer. Components of levels of protection (A,B,C,D and modifications) must be relevant to site-specific conditions, including heat stress potential and safety hazards. Include site-specific procedures for on-site fit-testing, cleaning, maintenance, inspection, and storage.

3.2.7 Medical Surveillance. All personnel performing on-site activities shall be participants in an ongoing medical

surveillance program, meeting the requirements of 29 CFR 1926.65 and ANSI Z-88.2. A description of the general medical surveillance program is to be included in the Safety and Health Program. All medical surveillance protocols and examination results shall be reviewed by a licensed physician who is certified in Occupational Medicine by the American Board of Preventative Medicine, or who, by necessary training and experience, is Board-eligible. The SSHP shall only describe the content and frequencies of any additional medical tests, examinations, and/or consultations determined necessary by the physician due to probable site-specific conditions, potential occupational exposures, and required protective equipment. Certification of participation in the medical surveillance program, the date of last examination, and name of reviewing occupational physician shall also be included for each affected employee. The written medical opinion from the attending physician required by 29 CFR 1926.65(f)(7) shall be made available upon request to the CO for any site employee.

3.2.8 Exposure Monitoring/Air Sampling Program (Personal and Environmental). Where it has been determined that there may be employee exposures to and/or off-site migration potentials of hazardous airborne concentrations of hazardous substances, appropriate direct-reading (real-time) air monitoring and integrated (time-weighted average (TWA)) air sampling shall be conducted in accordance with applicable regulations (OSHA, EPA, State). Both air monitoring and air sampling must accurately represent concentrations of air contaminants encountered on and leaving the site. Sampling and analytical methods following NIOSH (for on-site personnel and site perimeter locations) and/or EPA (for site perimeter or off-site locations) criteria shall be appropriately utilized. Personnel samples shall be analyzed only by laboratories successfully participating in and meeting the requirements of the American Industrial Hygiene Association's (AIHA) Proficiency Analytical Testing (PAT) or Laboratory Accreditation programs. Meteorological monitoring shall be performed on-site as needed and used as an adjunct in determining perimeter and any off-site monitoring/sampling locations. Where perimeter monitoring/sampling is not deemed necessary, provide a suitable justification for its exclusion. Noise monitoring and radiation monitoring (alpha, beta, gamma) shall be conducted as needed, depending on the site hazard assessment. All monitoring/sampling results shall be compared to "action levels" established pursuant to Paragraph 3.2.2 : "Hazard/Risk Analysis", above, to determine acceptability and need for corrective action.

3.2.9 Heat and Cold Stress Monitoring. Heat and/or cold stress monitoring protocols shall be implemented, as appropriate. Work/rest schedules shall be determined based upon ambient temperature, humidity, wind speed (wind chill), solar radiation intensity, duration and intensity of work, and protective equipment

ensembles. Minimum required physiological monitoring protocols which will affect work schedules shall be developed. In cases where impervious clothing is worn (full-body), the NIOSH/OSHA/USCG/EPA "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" protocol for prevention of heat stress shall be followed, and heat stress monitoring shall commence at temperatures of 70 degrees Fahrenheit and above. Where impervious clothing is not worn, the most current published ACGIH heat stress standard (TLV) shall be used. For cold stress monitoring to help prevent frostbite and hypothermia, the most current published ACGIH cold stress standard shall be referenced and followed, as a minimum.

NOTE: If either heat or cold stress is not anticipated due to the season or local climate, provide a negative declaratory statement as mentioned in section 3.2.

3.2.10 Standard Operating Safety Procedures, Engineering Controls and Work Practices. Address the following elements as a minimum: (1) Site rules/prohibitions (buddy system, eat/drink/smoking restrictions, etc.); (2) Material handling procedures (soils, liquids, radioactive materials); (3) Drum/container handling procedures and precautions (opening, sampling, overpacking); (4) Confined space entry procedures; (5) Hot-work, sources of ignition, and electrical safety (ground-fault protection, overhead power line avoidance, etc.); (6) Excavation safety; (7) Machine guarding; (8) Fall protection; (9) Illumination; (10) Sanitation; (11) Engineering controls.

3.2.11 Site Control Measures. Include site map(s) containing work zone delineation and access points. Describe on-site and off-site communications, security (physical and procedural), and general site access.

3.2.12 Personal Hygiene and Decontamination. Specify necessary facilities and their locations. Detail standard operating procedures, frequencies, supplies and materials to accomplish decontamination of site personnel.

3.2.13 Equipment Decontamination. Specify necessary facilities, equipment, and their locations. Detail procedures, frequencies, supplies and materials, and methods to determine adequacy for the decontamination of equipment used on-site.

3.2.14 Emergency Equipment and First Aid Requirements. The following items, as appropriate, shall be immediately available for on-site use: (1) First aid equipment and supplies approved by the consulting MD; (2) Emergency eyewashes/showers (comply with ANSI Z-358.1, 1910.151(c)); (3) Emergency

respirators (worst-case appropriate); (4) Spill control materials and equipment; and (5) Fire extinguishers (specify type- i.e., 10 B/C , size, locations).

3.2.15 Emergency Response and Contingency Procedures (On-Site and Off-Site). This section of the SSHP shall contain an Emergency Response Plan in compliance with 29 CFR 1926.65(1), which addresses the following elements, as a minimum: (1) Pre-emergency planning and procedures for reporting incidents to appropriate government agencies for potential chemical exposures, personal injuries, fires/explosions, environmental spills and releases, discovery of radioactive materials; (2) Personnel roles, lines of authority, communications; (3) Posted instructions and a list of emergency contacts: (physician, nearby medical facility, fire and police departments, ambulance service, federal/state/local environmental agencies, CIH, Contracting Officer); (4) Emergency recognition and prevention; (5) Site topography, layout, and prevailing weather conditions; (6) Criteria and procedures for site evacuation (emergency alerting procedures/employee alarm system, emergency PPE and equipment, safe distances, places of refuge, evacuation routes, site security and control); (7) Specific procedures for decontamination and medical treatment of injured personnel; (8) Route maps to nearest pre-notified medical facility; (9) Criteria for initiating community alert program, contacts, and responsibilities; and (10) Critique of emergency responses and follow-up.

3.3 Logs, Reports and Recordkeeping. The following logs, reports, and records shall be developed, maintained, and submitted to the CO at the conclusion of the site work: (1) Training logs (site-specific, visitor); (2) Daily safety inspection logs (may be part of the Daily QC Reports); (3) Employee/visitor register; (4) Environmental and personal exposure monitoring/sampling results.

4. Document Revisions, Addenda, and Field Modifications. Review comments issued prior to SSHP approval shall be incorporated by revising and reissuing affected pages. If major revisions are necessary, the entire Plan shall be resubmitted for review and approval. Minor changes affecting only a few pages may be made by addenda sheets and resubmitted. Once on-site, unanticipated field conditions encountered which were not addressed in the approved SSHP shall be immediately reported to the CO. Field activities in such areas shall be halted until the SSHP has been modified to reflect changed conditions and reviewed/approved by the CO.

5. CO-Approved Visitors. The Contractor shall continuously maintain on-site a minimum of four (4) sets of protective equipment (except for air-purifying respirators, prescription safety glasses, and safety shoes) for government visitor usage. These ensembles shall include all PPE specified in the SSHP. If protective clothing

is included, at least one set shall be size X-large.

6. Special Considerations. (A) Where excavations and/or confined spaces shall be entered, the contractor shall comply with all applicable portions of §1926.650-.652 and §1910.146.

PHASE PLAN GUIDELINES

1. Definition of Phase. A phase is an operation involving a type of work which presents hazards not experienced in previous operations or where new subcontractors are performing the work. The three components, phase-hazard-action, are described in the attached sheets. These include:

a. Phase of Construction. This sample contains a list of phases and subphases that may require a separate phase safety plan. Obviously, all the phases listed will not be applicable to each project and some projects may involve phases not identified in this list.

b. Hazards. This sample contains a list of some of the typical hazards that might be encountered. These are examples only, and should not be copied. It is necessary to study the work involved and to identify the specific hazards that will be experienced at this work area, as the hazards will vary significantly between projects. As an example, hazards encountered on underground utilities at one project may differ substantially from the hazards found at another similar project because of differences in soil, depth of excavation, proximity of structures and building, and locations of other utilities.

c. Sample Phase-Hazard-Action Outline. This sample shows a possible format for a phase safety plan that might be submitted on a representative project. This sample incorporates phases of construction, the hazards that may be encountered, and preventive actions that will be taken to overcome these hazards. This example should not be copied as each phase or project should be analyzed on an individual basis.

2. Individuality. Phase plans developed for one project should not be copied for another as the hazards differ substantially. In addition, there may be a number of alternative ways of dealing with a particular hazard. Accordingly, the phase plan for the project at hand must list only the alternative or combination of alternatives that have been chosen after considering the factors involved.

3. Implementation and Instruction. Employees performing the work must be made aware of the plans. For this reason, an important part of any phase plan is a description of the specific instructions and precautions that will be given to the employees who will be performing the work.

SAMPLE NO. 1
EXAMPLES OF MAJOR/SUBCONSTRUCTION PHASES

Earthmoving, Land Clearing and
Excavations for
Building Foundations

Hand operations
Equipment operations
Pile-driving
Sewer
Basement excavations

Trenching and

Utilities

Water
Gas
Communications cables

Concrete Work

Footings
Forming
Steel reinforcement
Concrete placement
Stripping
Material Storage
Finishing

Steel Erection

Delivery and storage
Erection

General Building Construction

Carpentry
Masonry
Floor, wall, brick cleaning
Plastering
Painting
Floor coverings
Roofing
Misc. finishing phases

Mechanical

Heating, vent/air cond.
Plumbing
Sprinkler systems

Electrical and Instrumentation

Interior
Aerial
Sodding/seeding
Underground
Alarm and intercom

Landscaping

Grading
Planting
Rock placement

Demolition

Quarrying

Paving

Tunneling

Explosive and Blasting

Cableway Operations

Marine Operations

Floating plant
Dredging/excavations
Diving
Rock placement
Piled-driving

NOTE: This is not to be considered a complete list of phases of construction.

Each project will require its own phase considerations.

SAMPLE NO. 2
EXAMPLES OF HAZARDS TO BE CONTROLLED

Falls
Stored

Into excavations
Into caissons
Round poles
From scaffolds
Steel materials
From roofs
From steelwork
From forms
From elevated floors
Through floor openings

Associated with

Through wall openings
such as:

Cave-ins Caused by:

Epoxies

Water
Acids
Vibration - traffic, rail, road,
Solvents
and equipment
Unknowns
Excavated material (spoil)

Associated with

Freezing/thawing
such as:
Heavy Equipment
Adjacent building foundations
operations
Existing utilities
dryers
Gravel veins

Fire Associated with:

Welding spatter

Associated with

Flammable liquids, vapors, and
such
paints
Flammable gases
Improper storage of combustibles
Sandblasting

Run Over by Equipment
(asbestos)

Collisions Between Equipment

Improperly Stacked or
Materials

Irregularly shaped items

Electrocution or Shock

Health Hazards

Chemicals and Caustics

Cement dust

Health Hazards

Toxic Vapors and Mists

Spray painting

Paint thinners and

Solvents
Adhesives
Carbon monoxide
Unknowns

Health Hazards

Toxic Particles and Dusts

as:

Masonry saws
Dry wall taping

Health Hazards

Associated with

Equipment Rolling Over

Crane Overturning
Sandblasting

Contact with Energized Powerlines

Drowning

Material Falling
with

as:

Crushed Under Equipment

Tire Servicing

Noise such as:

Jackhammer operations

Masonry saw operations

Grinding

Crushers

Woodworking equipment

Health Hazards Associated

Ionizing Radiation such

Soil testing

X-ray of welds

NOTE: This is not to be considered a complete list of hazards. Each project and each phase has its own peculiar hazards that must be controlled.

SAMPLE NO. 3
EXAMPLES OF A PHASE SAFETY PLAN FOR MASONRY CONTRACTORS

Contractor Name: James Masonry
 Contract No. 76-0000

Location: Jonesville Army Reserve Center,
NE
 Date Prepared: 2 May 1977

Equipment to be used: Forklift, mortar mixer, metal tubular scaffold, masonry saw

Phase of Construction Hazards to be Controlled Action to be Taken to Overcome
Hazards

Ground Level
 Masonry Activity
 operations.

(1. Backup alarms.
 Equipment running over employee----- (2. Barricade work areas.
 (3. Signalmen where required.
 (4. Brief drivers on proper and safe

and height.
 Back injuries due to over-stretching (1. Stack materials at proper level
 or improper lifting of materials--- (2. Set up disposal bins.

Tripping over materials or stepping
 on nails, etc.----- (1. Clean up materials.
 (2. Set up disposal bins.
 (3. brief employees to discard into proper
 disposal containers.

Materials being hoisted over
 employees' heads----- (1. Brief crane operator to stay away
 from area.

-----Masonry Wall Employees falling from elevated (1. Deck entire

scaffold.
 Construction toeboards on all structures; i.e., scaffold or (2. Install standard railing and floor------(open sides.
 for access. (3. Install standard ladder and tie off assembled. (4. Insure scaffolding is properly (5. Secure footings for scaffolds.

Sample No. 3 (Cont'd)
EXAMPLES OF A PHASE SAFETY PLAN FOR MASONRY CONTRACTORS

<u>Phase of Construction</u> <u>Overcome Hazards</u>	<u>Hazards to be Controlled</u>	<u>Action to be Taken to</u>
Masonry Wall Construction (Cont'd)	Tripping-----	(1. Clean up materials. (2. Set up disposal bins. (3. Brief employees to discard into proper disposal containers.
and height.	Back injuries-----	(1. Stack materials at proper level (2. Brief each employee on how to lift.
Cleanup and Other Masonry Supported Activities	Flying particles from brick saws chipping operations-----	(1. Safety goggles. (2. Proper guards on saws.
	Electrocution or Shock-----	(1. Grounded tools.
	Inhaling of toxic materials or	

APPENDIX E
SUBMITTAL REGISTER

AR309076

**SUBMITTAL REGISTER
BOARHEAD FARMS NPL SITE
HAVERTOWN, PA**

All Documents Overnight Mail Unless Otherwise Noted											
Name/Address	Draft Project Work Plans	Final Project Work Plans	Draft Cost Proposal	Final Cost Proposal	Verbal Covers. Record ¹	Weekly Status Report ¹	Daily Submit ¹	Draft Project Report	Final Project Report	HUM, LPS, LDRMC, CAT 1 Submit ²	
U.S. Army Corps of Engineers ATTN: CEMRO-CD-FC (Shaheen) Building 525 Castle Hall - 3rd Floor Offutt AFB, NE 68113 (402)293-2517; FAX: 291-8177	2	2	0	0	2	2	2	N/A	N/A	2	
U.S. Army Corps of Engineers ATTN: CEMRO-ED-GA (Dave Roy) mail to CEMRO-CD-FC (Shaheen) (402) 221-4493 FAX: 4571	1	1	0	0	0	0	0	N/A	N/A	1	
U. S. Army Corps of Engineers ATTN: CEMRO-ED-EG (Jim Beran) mail to CEMRO-CD-FC (Shaheen) (402) 221-7748 fax: 7948	1	1	0	0	0	0	0	N/A	N/A	1	
U.S. Army Corps of Engineers ATTN: CEMRO-ED-DK (Navis) mail to CEMRO-CD-FC (Shaheen) (402) 221-4428 FAX: 3842	1	1	0	0	0	0	0	N/A	N/A	1	
U.S. Army Corps of Engineers ATTN: CEMRO-ED-GH (Penoyer) mail to CEMRO-CD-FC (Shaheen) (402) 280-0042 FAX:	1	1	0	0	0	0	0	N/A	N/A	1	
U.S. Army Corps of Engineers ATTN: CEMRO-CT-C (Witcofski) 215 N. 17th Street Omaha, NE 68102-4978 (402) 221-4297	0	0	7	4	0	0	0	0	0	0	

AR309077

All Documents Overnight Mail unless Otherwise Noted										
Name/Address	Draft Project Work Plans	Final Project Work Plans	Draft Cost Proposal	Final Cost Proposal	Verbal Covers, Record	Weekly Status Report	Daily Submit	Draft Project Report	Final Project Report	HMM, MPS* LDRMC CAT 1 Submit
U.S. Environmental Protection Agency, Region III ATTN: Jim Harper (3HW21) 841 Chestnut Building Philadelphia, PA 19107 (215)597-6906 FAX: 9890	3	3	0	0	0	1	0	N/A	N/A	0

These items can be submitted using regular mail service. The Ft. Crook regular mail address would have P.O. Box 13287 substituted for the building address. The Omaha District address would remain the same.
This submittal of the Hazardous Waste Manifest, Waste Profile Sheets and Land Disposal Notifications will only be required if the Contractor is responsible for disposal of contaminated materials. The Contractor will need to contact the USACE-Project Engineer or On-Site Representative for further guidance on distribution of the waste disposal documents and Category 1 Submittals for USACE review.

AR309078

APPENDIX F

(not used)

AR309079

APPENDIX G
SALES AND USE TAX

AR309080

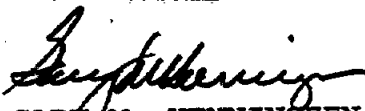
9 April 1996

MEMORANDUM FOR CEMRO-CD-FC-R (ATTN: Waleed W. Shaheen)

SUBJECT: Rapid Response, Pennsylvania State Sales and Use Tax

1. This memorandum is in response to your Groupwise message sent to Cindy Bluml on 4 April 1996 regarding sales and use tax for a Rapid Response project at Boarhead Farms Superfund site, Bucks County, Upper Black Eddy, Bridgeton Township, Pennsylvania.
2. According to Pennsylvania Statutes, 72 P.S. § 7202, Pennsylvania imposes a sales and use tax of six (6) percent. There is no local county sales or use tax that would apply.
3. No special exemptions exist for Federally-funded environmental projects and there is no provision for the return of sales and use taxes to the Federal Government for environmental projects.
4. Our office does not provide the tax statement for inclusion into the Scope of Work as you requested. Usually, the general tax statement found at FAR 52.229-3 is used in the Scope of Work. Office of Counsel's role with regard to sales and use taxes is explained in the enclosed memorandum dated 14 June 1995.
5. Please send all future requests for sales and use tax rates in a separate memorandum on Groupwise or in hard copy to Linda Burke or Lana Olson, paralegals in my office.

Encls


GARY M. HENNINGSEN
District Counsel

AR309081

APPENDIX H
DAVIS-BACON WAGE RATES

AR309082

General Decision Number PA960006

Superseded General Decision No. PA950006

State: Pennsylvania

Construction Type:
HEAVY
HIGHWAY

County(ies):

BUCKS
CHESTER

DELAWARE
MONTGOMERY

PHILADELPHIA

HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Modification Number

0
1

Publication Date

03/15/1996
04/12/1996

AR309083

PA960006 - 1

04/12/1996

COUNTY(ies):

BUCKS

DELAWARE

PHILADELPHIA

CHESTER

MONTGOMERY

CARP0454D 07/01/1995

	Rates	Fringes
PILED RIVERMEN	20.85	14.89+A

FOOTNOTE:

A. PAID HOLIDAYS: Washington's Birthday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (provided the employee works the day before the holiday and the day after the holiday)

CARP0612A 05/01/1995

	Rates	Fringes
CARPENTERS	20.32	11.59+A

FOOTNOTE:

A. PAID HOLIDAY: Labor Day

CARP1906A 07/01/1995

	Rates	Fringes
MILLWRIGHTS	20.42	12.39

ELEC0098A 11/01/1995

	Rates	Fringes
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BUCKS COUNTY: Starting at the Delaware River and following the west limits of the Borough of Bristol, along the continuation of U.S. Highway 13 and under the Pennsylvania Railroad Bridge to Route 09113, north 09113 to Route 152, north along Route 152 to the Humeville Road, east on Humeville Road to Route 333, north on Route 344 to the junction of Spurs 281 and 252, continue north on Spur 252 to Route 09028, west on 09028 to Route 152, north on 152 to TR 232, north on TR 532 to Tr 113, north on TR 113 to TR 232 at Anchor Inn, northeast on TR 232 and continue northeast along Route 659 to Route 09060, west on 09060 to Route 402, north on 402 to the Borough line at the southwest corner of the Borough of New Hope. The Borough of New Hope is excluded. Starting at the Delaware at the Delaware River and proceeding southwest along the Plumstead-Solebury and the Plumstead-Buckingham Township lines to Route 09064, northwest on 09064 to U.S. Highway 611 south on 611 to the spur of Route 270, northwest along the spur to Route 397, Southwest on 397 to Route 350, southeast on 350 to Route 395, southwest on 395 to Route 09060, southeast on 09069 to Route 09041 southwest on 09041 to the Montgomery County line.

DELAWARE COUNTY: That portion east of a line following State Highway 320 from Montgomery County to Maple, then along the Springfield Road to Saxer Ave, along Saxer Avenue to Powell

Road, along Powell Road to State Highway 420 and continuing in a straight line to the Delaware River.

MONTGOMERY COUNTY: That portion southeast of a line following Lower State Road from Bucks County southwest to the Bethlehem Pike (U.S Highway 309), south on the Bethlehem Pike to the Penllyn Pike, southwest on the Penllyn and Blue Bell Pikes to the Wissahickon Creek, southeast on the Wissahickon Creek to the Butler Pike to North Lane near Conshohocken Borough, southwest on North Lane to Schuylkill River and continuing southeast in a line to the Spring Mill Road and southwest on the Spring Mill Road to Delaware County.

PHILADELPHIA COUNTY

ELECTRICIANS	26.92	42.12%
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ELEC0102D 06/01/1995

	Rates	Fringes
BUCKS COUNTY (Plumstead, Bedminster, Tinicum, Nockomixon, Bridgeton and Durham Townships in their entireties, and that portion of Haycock and Springfield Townships east of a line following State Highway 412, from Northampton County south to Route 09071 to State Highway 212, along Highway 212 to Route 09068, and along 09068 to State Highway 313. Also included is that portion of Dublin Borough east of State Highway 313		

ELECTRICIANS	24.15	34.06%
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ELEC0126D 05/29/1995

	Rates	Fringes
LINE CONSTRUCTION:		
Lineman	29.49	14.75%+2.30
Winch Truck Operator	20.64	14.75%+2.30
Groundman	17.69	14.75%+2.30

* ELEC0269A 04/01/1996

	Rates	Fringes
BUCKS COUNTY (Area East of a line starting at the Delaware River and following the west limits of the Borough of Bristol, along the continuation of U.S. Highway 13 and under the Pennsylvania Railroad Bridge to Route 09113, north along 09113 to route 152, north along route 152 to the Hulmeville Rd., east on the Hulmeville to Route 344, north on route 344 to the junction of Spurs 281 and 252 continue north on spur 252 and route 09028, west on 09028 to Route 152, north on 152 to TR 532, north on TR 532 to TR 113, north on TR 113 to TR 232 as Anchor Inn, northeast on TR 232 and continue northeast along 659 to Route 09060, West on 09060 to Route 402, north on 402 to the Borough Line at the southwest corner of the Borough of New Hope; including the Boroughs of New Hope and Bristol)		

ELECTRICIANS	29.06	28%+4.20
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ELEC0269C 10/01/1994

	Rates	Fringes
BUCKS COUNTY - That portion east of a line starting at the Delaware River and following the west limits of the Borough of Bristol, along the continuation of U.S. Highway 13 and under the Pennsylvania Railroad Bridge to Route 09113, north along 09113 to route 152, north along route 152 to the Hulmeville Rd., east on the Hulmeville to Route 344, north on route 344 to the junction of Spurs 281 and 252 continue north on spur 252 and route 09028, west on 09028 to Route 152, north on 152 to TR 532, north on TR 532 to TR 113, north on TR 113 to TR 232 as Anchor Inn, northeast on TR 232 and continue northeast along 659 to Route 09060, West on 09060 to Route 402, north on 402 to the Borough Line at the southwest corner of the Borough of New Hope. The Boroughs of New Hope and Bristol are included.		

LINE CONSTRUCTION:

Lineman, Cable Splicer,		
Heavy Equipment Operator,		
and Truck Drivers	28.28	4.20+28%
Groundman, Winch Operator	22.62	4.20+28%

* ELEC0313G 12/01/1994

	Rates	Fringes
DELAWARE COUNTY : (That portion south of U.S. Highway No. 1 and west of U.S. Highway No. 202)		

ELECTRICIANS	20.67	10.73
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ELEC0375A 06/01/1995

	Rates	Fringes
BUCKS COUNTY (East Rock Hill, West Rock Hill, Milford and Richland Townships in their entirety and that portion of Haycock and Springfield Townships west of a line following State Highway 212 from Northampton County South to Route 09071 along 09071 to state Highway 212, along Highway 212 to Route 09068 and along 09068 to State Highway 313)		

ELECTRICIANS	22.25	3%+4.18
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* ELEC0380A 09/04/1995

	Rates	Fringes
BUCKS COUNTY (Hilltown and New Britain Townships in their entirety; that portion of Telford Borough Northeast of County Line Road (Main Street) and bounded by West Rock Hill and Hilltown Township that portion of Dublin Borough West of State Highway 313, and that portion of Doylestown and Warrington Townships and Doylestown Borough Northwest of a line following U.S. Highway 611 South from Route 09064 to the spur of Route		

270, and proceeding Northwest along the spur to Route 397, Southwest on 397 to Route 350, Southeast on 350 to Route 395, Southwest on 395 to Route 09069, Southeast on 09069 to Route 09041, Southwest on 09041 to the Montgomery County Line)

DELAWARE COUNTY (The portion of Radnor Township North of U.S Highway 30 and West of State Highway 320)

MONTGOMERY COUNTY (The portion Northwest of a line following Lower State Road from Bucks County Southwest to Bethlehem Pike (U.S. Highway 309), South on Bethlehem Pike to Penllyn Pike, Southwest on the Penllyn and Blue Bell Pikes to Wissahickon Creek to the Butler Pike, Southwest Wissahickon Creek to Butler Pike, Southwest on Butler Pike, to North Lane near Conshohocken Borough, Southeast on North Lane to the Schuylkill River and continuing Southeast in a line to Spring Mill Road, Southwest on Spring Mill Road to Delaware County; but excluding Upper Hanover, Douglas, Upper Pottsgrove, West Pottsgrove Townships and also excluding that portion of the Borough of Pottstown North and West of a line drawn Northeast on Kein Street from the Schuylkill River to Reading Railroad Northwest on the railroad to Madison Street, to High Street, East on High Street to Green Street, North on Green Street and Northeast on Mintzer Street to Lower Pottsgrove Township Line, along this township line and the borough line Northwest to Adams Street and Beehive Road, Northeast on Beehive Road to the Township Line at Mervine Street)

ELECTRICIANS

26.59

33%

ELEC0654A 08/28/1995

Rates

Fringes

DELAWARE COUNTY (The portion south of U.S. Highway 30 and north of that part U.S. Highway 1 between U.S. Highway 202 and the Chester County Line, and east of that part of U.S. Highway 202 between U.S. Highway 1 and the Delaware Line, and west of a line extending from Montgomery County along State Route 320 to Maple, then along the Springfield Road to Saxer Avenue, along Saxer Avenue to Powell Road; along Powell Road to State Highway 420; along 420 and continuing in a straight line to the Delaware River in the State of Pennsylvania)

ELECTRICIANS

24.29

8.64

ELEC0743A 09/01/1994

Rates

Fringes

CHESTER (Coatesville, Honey Brook, South Coventy, Valley, Wallace, Warwick, West Brandywine, West Clan, and West Nantmeal Twps); AND MONTGOMERY (Douglas, Pottstown, Upper Pottsgrove, and West Pottsgrove, Twps) COUNTIES

ELECTRICIANS

20.25

3%+5.12

ELEC0743G 06/01/1995

CHESTER COUNTY (The portion of Sadsbury and West Sadsbury
Township north of U.S. Highway 30)

	Rates	Fringes
ELECTRICIANS	17.70	3%+3.37

ENGI0542D 05/01/1995

	Rates	Fringes
POWER EQUIPMENT OPERATORS: HEAVY, HIGHWAY, AND WATER LINE CONSTRUCTION (Off Plant Site)		

GROUP 1	22.28	29.5%+4.76+A
GROUP 2	22.03	29.5%+4.76+A
GROUP 3	18.56	29.5%+3.96+A
GROUP 4	18.26	29.5%+3.96+A
GROUP 5	16.53	29.5%+3.96+A
GROUP 6	15.54	29.5%+3.96+A

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Handling steel and stone in connection with erection, cranes doing hook work, any machine handling machinery, helicopters, concrete pumps building machines similar to the above, including remote control equipment.

GROUP 2: All types of cranes, All types of backhoes, Cableways, Draglines, Keystones, all types of shovels, Derricks, Pavers 21E and over, Trenching machines, Trench shovel, Graddalls, Front-End loaders, Boat Captain, Pippin type backhoes, Tandems scrapers, Towers type crane operation erecting, Dismantling, Jumping or Jacking, Drills (self-contained), (drillmaster type) forklift (20 ft. and over), Motor patrols (fine grade), Batch plant with mixer, Carryalls, Scraper, Trounapulls, Roller (Hith Grade Finishing), Spreaders (asphalt), Bulldozers and Tractors, Mechanic welder, Conveyor loaders (euclid-type wheel), Concrete pump, Milling Machines, Hoist with two towers, Building hoist double drum (unless used as a single drum), Mucking machines in tunnel, All auto grade and concrete finishing machines, Bundle pullers/extractors (tublar), toxic/hazardous waste removal rate 20 per cent added to all classification, bobcat, side broom, directional boring machines, vermeet saw type machines (other than hand held) tractor mounted hydro axe, chipper with boom, all machine similar to the above includidng remote control equipment.

GROUP 3: Asphalt plant engineers, Well drillers, Ditch witch (small trencher), Motor patrols, Fine grade machines, Ten-ton roller (grade fill stone base), Concrete breaking machines, Guilloline only, Stump grinder, Conveyors (except building conveyors), Fork lift trucks of all types, High pressure boliers,

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Machine similar to the above, including remote control equipment.

GROUP 4: Seaman, Pulverizer form line grader, Farm tractors, road finishing, Concrete spreader, Power broom (self-contained), Seed spreader, Grease truck.

GROUP 5: Compressors pumps, Well point pumps, Welding machines Tireman, Power equipment, Maintenance engineer (power boats), and machines similar to the above.

GROUP 6: Fireman, Oilers and deck hands (personnel Boats), grease truck.

FOOTNOTE:

A. PAID HOLIDAYS: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day and Christmas Day

****TOXIC/HAZARDOUS WASTE REMOVAL**** Add 20 per cent to basic hourly rate for all classifications

IRON0068D 07/01/1995	Rates	Fringes
BUCKS COUNTY (Remainder)		
IRONWORKERS, Structural, Ornamental, and Reinforcing	24.35	16.10

IRON0161A 07/01/1995	Rates	Fringes
BUCKS COUNTY (Includes the towns of Bensalem, Breadysville, Bristol, Churchville, Cornwells Heights, Davisville, Eddington, Feasterville, Hartsville, Johnsville, Line Lexington, Neshaminy, Southhampton, Tradesville, Trevose, Unionville, Warminster, and Warrington), DELAWARE (North of a line running along State Route 352 to right on Stae Route 291 to State Line); CHESTER (Includes the towns of Alsham, Anselma, Bacton, Berwyn, Cedar Hollow, Charlestown, Chester Springs, Cromby, Devon, Devault, Daylesford, Diamond Rock, Dutton Mill, Frazer, Goshenville, Howellville, Kimberton, Ludwig Corner, Paoli, Matthews, Perkiomen Junction, Phoenixville, Rapps Corner, Rocky Hill, Strafford, Sugartown, Tanguy, Valley Forge, Valley Store, White Horse, Williams Corner); MONTGOMERY (Remainder); and PHILADELPHIA COUNTIES		

IRONWORKERS:		
Rigger and Machinery Mover	22.95	11.45

IRON0401A 07/01/1995

	Rates	Fringes
BUCKS (Includes the towns of Bensalem, Breadysville, Bristol Churchville, Cornwells Heights, Davisville, Eddington, Feasterville, Hartsville, Johnsville, Line Lexington, Neshaminy, Southampton, Tradesville, Trevoise, Unionville, Warminster, and Warrington); DELAWARE (North of a line running along State Rt 352 to right on State Rt 291 to State Line); CHESTER (Includes the towns of Aldham, Anselma, Bacton, Berwyn, Cedar Hollow, Charlestown, Chester Springs, Cromby, Devon, Devault, Daylesford, Diamond Rock, Dutton Mill, Frazer, Goshenville, Howellville, Kimberton, Ludwigs Corner, Paoli, Matthews, Perkiomen Junction, Phoenixville, Rapps Corner, Rocky Hill, Strattford, Sugartown, Tanguy, Valley Forge, Valley Store, White Horse, Williams Corner, and Wilsons Corner); MONTGOMERY (Remainder); and PHILADELPHIA COUNTIES		

IRONWORKERS:

Structural and Ornamental	25.35	12.65
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IRON0405A 08/01/1995

	Rates	Fringes
BUCKS (Includes the towns of Bensalem, Breadysville, Bristol, Churchville, Cornwell Heights, Davisville, Eddington, Festerville, Hartsville, Johnsville, Line Lexington, Neshaminy, Southampton, Transville, Trevoise, Unionville, Warminster, and Warrington), DELAWARE (North of a line running along State Route 352 to right on State Route 291 to State Line); CHESTER (Includes the towns of Aldham, Anselma, Bacton, Berwyn, Cedar Hollow, Charlestown Chester Springs, Cromby, Devon, Devault, Daylesford, Diamand Rock, Dutton Mill, Frazer, Goshenville, Howellville, Kimberton, Ludwigs Corner, Paoli, Mathews, Perkiomen Junction, Phoenixville, Rapps Corner, Rocky Hill, Strafford, Sugartown, Tanguy, Valley Forge, Valley Store, White Horse, Williams Corner, and Wilsons Corner); MONTGOMERY (Remainder); AND PHILDELPHIA COUNTIES		

IRONWORKERS:

Reinforcing Steel Mesh, Rebar Work	22.64	11.20
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IRON0420G 07/01/1995

	Rates	Fringes
MONTGOMERY COUNTY (Anise, Berguy, Congo, Douglas, East Greenfield, East Limerick, East Slaford, East Zieglerville, Engleville, Fagleysville, Ford, Gilbertsville, Green Lane, Hanover, New Perksionenville, Niato, Palm, Obelish, Pennsburg, Perkiomen, Pottstown, Royerford, Roytown, Sammamansville, Tylerport, Upper Hanover, Upper Pottsgrove, Upper Wodall, West Limerick, West Salford, and West Zieglerville Townships)		

IRONWORKERS:

Projects \$100,000,000 and greater, all work	19.40	11.20
Projects less than \$100,000,000	18.90	11.20
Fence and Overhead Door Erectors on projects less than \$100,000,000	16.07	11.20

IRON0451D 07/01/1995

	Rates	Fringes
CHESTER (Remainder of County), AND DELAWARE (Remainder of County) COUNTIES		

IRONWORKERS:

Structural, Ornamental, and Reinforcing	20.10	11.25
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LABO0401A 05/01/1995

	Rates	Fringes
LABORERS:		
GROUP 1	17.56	8.54
GROUP 2	17.36	8.54
GROUP 3	17.26	8.54
GROUP 4	17.41	8.54
GROUP 5	17.16	8.54
GROUP 6	17.81	8.54
GROUP 7	17.66	8.54
GROUP 8	17.51	8.54
GROUP 9	18.06	8.54
GROUP 10	11.96	8.54
GROUP 11	20.67	8.54

LABORERS CLASSIFICATIONS

GROUP 1: Powderman; multiple wagon drill operator under pinning excavation; bottom man

GROUP 2: Finished surface asphalt raker; pipelayers; conduit and duct layer; jackhammer operator; paving breaker; experienced pipelayer or caulker (all joints up to within 5 ft of building foundation line)

GROUP 3: Other pneumatic tool operators; laborers stripping concrete forms, carrying or handling lumber, steel, steel mesh, and other concrete materials; form pinners; tool room men; mortar mixers; concrete pitman & spaders; grademen; asphalt shovelers; setting cut stone, granite or artificial stone; hod carriers; scaffold builders; all other laborers with the exception of workers in compressed air, relief joints and approach slab; men working in sheeting, pouring concrete, assembling and placing gabians

GROUP 4: Wagon drill operators

GROUP 5: Yard workers: Laborers, sscale mixmen, burnermen, dustmen, feeder

GROUP 6: Free air tunnel: Miner bore driver, blaster, drillers pneumatic shield operator; miners

GROUP 7: Miners' helpers; form setters; circular caisson excavation bottom men underpinning excavation bottom men, welders, burners and air tugger

GROUP 8: Trackmen; brakemen; groutmen; bottom shaft men; all others in free air tunnels

GROUP 9: Welders and burners

GROUP 10: Flaggers

GROUP 11: Toxic/hazardous waste handler

LAB00402A 01/01/1995

	Rates	Fringes
LANDSCAPING:		
Landscape Laborers	13.98	7.72+A
Farm Tractor Driver, Hydroseeder Nozzleman, Mulcher Nozzleman	14.48	7.72+A

FOOTNOTE:

A. PAID HOLIDAYS: Independence Day, Labor Day, and
Thanksgiving Day

PAIN0021D 05/01/1995

	Rates	Fringes
BUCKS, CHESTER, DELAWARE, PHILADELPHIA COUNTIES AND REMAINDER OF MONTGOMERY COUNTY		
PAINTERS:		
Brush	20.63	8.85
Spray, Steel, Swing	21.88	8.85
Roller	20.63	8.85

* PAIN0071A 06/01/1995

	Rates	Fringes
MONTGOMERY COUNTY (Douglas, New Hanover, Pottsgrove, and Pottstown Townships)		
PAINTERS:		
Brush & Roller	16.90	5.05
Spray	17.40	5.05
Steel	18.30	5.05

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PLAS0592A 05/01/1995

	Rates	Fringes
CEMENT MASONS	19.20	11.69

TEAM0470B 05/01/1995

	Rates	Fringes
TRUCK DRIVERS:		
GROUP 1	17.25	5.9725+A+B
GROUP 2	17.35	5.9725+A+B
GROUP 3	17.60	5.9725+A+B

FOOTNOTES FOR TRUCK DRIVERS:

- A. PAID VACATION: Employee will earn one vacation day for every two months up to a maximum of five vacation days per calendar year. During each two consecutive months period, employee must have worked twenty-six days in that two month period. After 130 workdays the employee will be entitled to all days of vacation.
- B. PAID HOLIDAYS: Memorial Day, Independence Day, Labor Day and Veterans Day and five personal holidays provided such employee works the scheduled work day before and after said holiday; and employee gives employer one week's notice requesting a personal holiday. The eligibility for personal holiday every two months up to a maximum of five consecutive month period, employee must have worked 26 days in that two month period. After 130 work days the employee will be entitled to all personal holidays.

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1 - Stake body truck (single axle, dumpster)

GROUP 2 - Dump trucks, tandem and batch trucks, semi-trailers, agitator mixer trucks, and dumpcrete type vehicles, asphalt distributors, farm tractor when used for transportation, stake body truck (tandem)

GROUP 3 - Euclid type, off-highway equipment or belly dump trucks and double hitched equipment, staddle (ross) carrier, low-bed trailers

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(v)).

In the listing above, the "SU" designation means that rates listed under that identifier do not reflect collectively bargained wage and fringe benefit rates. Other designations indicate unions whose rates have been determined to be prevailing.

END OF GENERAL DECISION

APPENDIX I
PROJECT FORMS

AR309095

RAPID RESPONSE DAILY WORK ORDER

(PRIMARY CONTRACTOR'S NAME)

(CONTRACT NUMBER)

(SITE NAME AND LOCATION)

REPORT NO. _____ DELIVERY ORDER NO. _____ DATE _____

SUBCONTRACTOR(S):

GOVERNMENT AGENCIES ON-SCENE:

INSTRUCTIONS: THE CONTRACTOR SHALL BE ATTACHED TO THE RAPID RESPONSE QUALITY CONTROL DAILY REPORT AND SHALL BE SUBMITTED DAILY AT THE CLOSE OF BUSINESS TO THE ON-SITE CORPS REPRESENTATIVE. CONCURRENTLY, THE CONTRACTOR SHALL PROVIDE ELECTRONIC ACCESS TO THE COMPLETED FORMS TO THE CORPS DISTRICT OFFICE AND THE AREA OFFICE.

1. DESCRIPTION OF WORK TO BE PERFORMED BY CONTRACTOR(S), WITH AN ESTIMATE OF THE PERCENTAGE TO BE COMPLETED: _____

2. NUMBER OF PERSONNEL AUTHORIZED TO PERFORM WORK ON-SITE AND OFF-SITE

SUPERVISORS _____
ENGINEERS _____
GEOLOGIST _____
EMT _____
LABORERS _____

FOREMAN _____
CHEMIST _____
SAFETY _____
TECHS _____
OPERATORS _____

OTHERS (SPECIFY):

[illegible]

3. EQUIPMENT AND EXPENDABLE MATERIALS AUTHORIZED:

[illegible]

4. TEST AND/OR INSPECTIONS TO BE PERFORMED (INDICATE TYPE AND LOCATION):

5. ADDITIONAL COMMENTS/REMARKS:

6. CERTIFICATION: I CERTIFY THAT THE ABOVE WORK IS ORDERED AND AUTHORIZED BY THE ON-SITE CORPS REPRESENTATIVE IN THE PERFORMANCE OF THE ABOVE CITED CONTRACT.

ON-SITE CORPS REPRESENTATIVE

7. I ACKNOWLEDGE RECEIPT OF THIS WORK ORDER AND UNDERSTAND THAT ANY MODIFICATION TO THE WORK ORDER MUST BE IN WRITING AND APPROVED BY THE PROJECT MANAGER.

CONTRACTOR'S REPRESENTATIVE

8. WORK ORDER AMENDMENTS AND MODIFICATIONS (INCLUDE TIME, DESCRIPTION, AND AUTHORIZING PERSON): _____

ON-SITE CORPS REPRESENTATIVE

CONTRACTOR'S REPRESENTATIVE

RAPID RESPONSE QUALITY CONTROL DAILY REPORT

(CONTRACTOR'S NAME)

(CONTRACT NUMBER)

(SITE NAME AND LOCATION)

REPORT NO. _____ DELIVERY ORDER NO. _____ DATE _____
WEATHER _____ RAINFALL. *✓* INCHES TEMP: MIN. _____ MAX. _____

INSTRUCTIONS: THE CONTRACTOR SHALL SUBMIT THIS FORM DAILY AT THE CLOSE OF BUSINESS TO THE ON-SITE CORPS REPRESENTATIVE. CONCURRENTLY, THE CONTRACTOR SHALL PROVIDE ELECTRONIC ACCESS TO THE COMPLETED FORMS TO THE CORPS DISTRICT OFFICE AND THE AREA OFFICE.

1. WORK PERFORMED TODAY BY PRIMARY CONTRACTOR ON-SITE AND/OR OFF-SITE (INCLUDING A COMPLETE DESCRIPTION):

[illegible]

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or printed text on the paper. A small, dark smudge or mark is visible near the bottom center of the page.

THE DAILY PERSONNEL COST REPORT IS REQUIRED FOR ALL COST REIMBURSABLE WORK ON-SITE AND OFF-SITE INCLUDING SUBCONTRACTORS. AT A MINIMUM, THE COST REPORT SHALL PROVIDE: REPORT TITLE, SITE NAME, CONTRACTOR, CONTRACT NUMBER, DELIVERY ORDER NUMBER, DATE, EMPLOYEE NAME AND CLASSIFICATION, HOURLY LABOR RATES (REGULAR, OVERTIME OR OTHER), TOTAL HOURS (REGULAR, OVERTIME OR OTHER) AND PER DIEM. LABOR COSTS SHALL BE SUMMED FOR: EACH EMPLOYEE, THE ENTIRE DAILY REPORT, THE ENTIRE DELIVERY ORDER (UP TO THE DATE OF THE REPORT) AND THE PERCENTAGE OF THE ESTIMATED COST OF LABOR.

[illegible]

[illegible]

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[illegible]

8. COMPLETE AND ATTACH THE DAILY EQUIPMENT COST REPORT AT THE END OF THIS DOCUMENT AND LABEL AS APPENDIX 2. THE DAILY EQUIPMENT COST REPORT IS REQUIRED FOR ALL COST REIMBURSABLE WORK ON-SITE AND OFF-SITE INCLUDING SUBCONTRACTORS. AT A MINIMUM, THE COST REPORT SHALL PROVIDE: REPORT TITLE, SITE NAME, CONTRACTOR, CONTRACT NUMBER, DELIVERY ORDER NUMBER, DATE, EQUIPMENT TYPE AND IDENTIFICATION NUMBER, HOURS IN SERVICE, HOURS STANDBY, HOURS IDLE TIME, COST RATE, AND DAYS IN SERVICE. EQUIPMENT COSTS SHALL BE SUMMED FOR: EACH TYPE, THE ENTIRE DAILY EFFORT, THE ENTIRE DELIVERY ORDER (UP TO THE DATE OF THE REPORT) AND THE PERCENTAGE OF THE ESTIMATED COST OF EQUIPMENT.

9. LIST THE TOTAL NUMBER OF SAMPLES COLLECTED AND TESTED FOR THE DAY:
COLLECTED: _____ TESTED: _____ AMPLIFYING INFO. _____

10. LIST THE TOTAL QUANTITY OF WASTEWATER TREATED: _____ GALLON(S)

11. LIST THE TOTAL NUMBER OF DRUMS OVERPACKED:

QUANTITY	LOCATION	HAZ-CAT
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

12. LIST THE TOTAL AMOUNT OF WASTE(S) REMOVED FROM THE SITE:

LIQUID: _____ BBL/GAL SOLIDS: _____ YDS/TONS

AMPLIFYING INFO: _____

13. LIST THE FOLLOWING TRANSPORTATION AND/OR DISPOSAL INFORMATION:

QUANTITY	ID. NO.	MATERIAL	MANIFEST NO.	DISPOSAL LOCATION

14. COMPLETE AND ATTACH THE DAILY MATERIAL COST REPORT AT THE END OF THIS DOCUMENT AND LABEL AS APPENDIX 3. THE DAILY MATERIAL COST REPORT IS REQUIRED FOR ALL COST REIMBURSABLE WORK ON-SITE AND OFF-SITE INCLUDING SUBCONTRACTORS. AT A MINIMUM, THE COST REPORT SHALL PROVIDE: REPORT TITLE, SITE NAME, CONTRACTOR, CONTRACT NUMBER, DELIVERY ORDER NUMBER, DATE, MATERIAL PURCHASED, QUANTITY AND UNITS, LOCATION OF MATERIAL, AND VENDOR. MATERIAL COSTS SHALL BE SUMMED FOR: EACH PURCHASE, THE ENTIRE DAILY EFFORT, THE ENTIRE DELIVERY ORDER (UP TO THE DATE OF THE REPORT) AND THE PERCENTAGE OF THE ESTIMATED COST OF MATERIALS.

15. LIST ALL SAFETY VIOLATIONS OBSERVED AND CORRECTIVE ACTIONS:

16. LIST ANY CREDITS AND/OR ADJUSTMENTS DUE TO THE GOVERNMENT (REFERENCE INVOICE NUMBER, CONVERSATIONS, ETC.).

17. COMPLETE AND ATTACH THE RAPID RESPONSE DAILY WORK ORDER AT THE END OF THIS DOCUMENT AND LABEL AS APPENDIX 4. THE DAILY WORK ORDER IS REQUIRED FOR ALL COST REIMBURSABLE WORK ON-SITE AND/OR OFF-SITE INCLUDING SUBCONTRACTORS. THIS DOCUMENT DETAILS THE CONTRACTORS NEXT DAY WORK EFFORT WHICH SHALL HAVE ADVANCE APPROVAL BY THE ON-SITE CORPS REPRESENTATIVE BEFORE THE CONTRACTOR IS ENTITLED TO COST REIMBURSEMENT.

18. ADDITIONAL COMMENTS/REMARKS:

19. CERTIFICATION: I CERTIFY THAT THE ABOVE REPORT IS COMPLETE AND CORRECT AND THAT I, OR MY AUTHORIZED REPRESENTATIVE, HAVE INSPECTED ALL WORK PERFORMED THIS DAY BY THE PRIMARY CONTRACTOR AND EACH SUBCONTRACTOR AND HAVE DETERMINED THAT ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP ARE IN STRICT COMPLIANCE WITH THE PLANS AND SPECIFICATIONS, EXCEPT AS NOTED ABOVE.

CONTRACTORS DESIGNATED
QUALITY CONTROL REPRESENTATIVE

APPENDIX J

SITE SPECIFIC ADVANCED AGREEMENTS

AR309106

**Site Specific Advanced Agreements
Boarhead Farms NPL Site
Pre-design Sampling Effort and Residential Treatment Systems
May 21, 1996**

1. Cost proposal is based on the USACE Scope of Work dated April 23, 1996.
2. The number of soil borings, samples, and analysis included in this proposal correspond to the quantity specified in the scope. Should additional borings or samples be required during the field activities; additional funding will be required.
3. Temporary office facilities have been included for a period of three months for this portion of the work.
4. The analytical prices included in this proposal are based on a seven (7) day turnaround for all the chemical analysis for the soil samples. The geotechnical tests are time dependent. However, the results will be provided in the quickest turnaround time possible. The drinking water tests are priced for standard turnaround times.
5. IT has based the cost of the residential treatment systems and the installation on the preliminary proposals obtained from potential vendors and a local plumbing contractor. IT has assumed that each treatment unit will take one half day to install at each location and has estimated the plumbing costs accordingly. The final costs of the systems will be dependent on the final design, the installation requirements and any additional requirements which arise during the final design of the systems.
6. The mobilization costs have been figured based on utilizing personnel from the IT Pittsburgh office. The hours are based on eight hours for driving and six hours for flying to the jobsite.
7. IT has assumed that we will be permitted access to each house as required to install the water treatment systems upon notification of the homeowner by the USEPA.
8. Operations and maintenance costs are estimated at this time and will be refined based on the final design and selection of the treatment systems.

AR309107

9. Analysis and disposal of any PPE or other generated wastes (other than spent carbon) have not been included in this proposal. IT assumes that these can be disposed during future phases of the project.
10. The summary report proposed and estimated is only intended to detail the activities and results of the boring phase of the project and is not intended to function as a complete project report.

AR309108

APPENDIX K

GEOTECHNICAL SAMPLING & ANALYSIS SPECIFICATIONS

AR309109

GEOTECHNICAL ANALYSIS

Site Specific Scope of Services

1. **Introduction.** The Contractor shall complete the following field investigations as pre-design to construction projects at Boarhead Farms NPL site. The investigation shall conform to the following specifications. In addition, all federal, state and local guidance and regulations shall be strictly followed. Any conflict between this SOS and any regulatory requirements shall be immediately brought to the attention of the USACE project manager for resolution.

The geology of the area is outlined in reports from previous investigations and shall be made available to the Contractor by the Contracting Officer (CO) upon request. The Contractor shall review all documents prior to initiation of the field effort.

The Contractor shall notify CEMRO-CD-FC (Shaheen) a minimum of 10 days prior to commencing any work under this contract.

2. **Field investigations.** A total of sixteen (16) borings, numbered BF-95-1 through BF-95-16, are required for the Boarhead Farms NPL Site. Eight (8) borings shall be required for foundation investigation at two potential treatment plant sites (four at each location). Eight (8) borings shall be used to investigate the collection trench alignment. ~~One (1) boring shall be utilized to determine road and soil conditions for the installation of a culvert under Lonely Cottage Road in the southeastern area of the site.~~ Soil samples for laboratory chemical analysis are required for all borings identified below. Sampling protocol is specified in the Chemistry Section of this scope of services. Drill logs, subsurface geotechnical samples, composite soil chemical analytical samples and groundwater information are required. General boring locations are provided on the enclosed maps for potential foundation locations, the trench alignment ~~and the culvert location.~~ Exact boring locations shall be provided in the field by the contracting officer's representative at the time of drilling. Depths and types of sampling are specified below:

AR309110

Drill Hole No.	Total Depth (ft)	Standard Penetration Tests	Geotechnical Samples ¹	Undisturbed Samples Shelby Tubes ²
BF-1-95 & BF-2-95	8	YES	JAR	NO
BF-3-95 & BF-4-95	8	YES	JAR	YES
BF-5-95 & BF-6-95	8	YES	JAR	NO
BF-7-95 & BF-8-95	8	YES	JAR	YES
BF-9-95 to BF-16-95	8	YES	JAR	NO
BF 17-95	8	YES	JAR	NO

The treatment building investigations (two areas) shall determine all information necessary to construct the treatment facility. The information shall include appropriate geotechnical data and contaminant data for health and safety issues and soil disposal during construction.

The collection trench is estimated to extend approximately 1,150 lineal feet. Borings shall be placed on 150 ft. spacings along the trench alignment. Additional borings may be required along the alignment to fill geotechnical data gaps. Data gaps may include identifying bedrock irregularities, soil contamination or potential fill areas. Additional borings required for bedrock depth investigation may not require chemical sampling. The requirement for additional borings shall be determined in the field by the CO's on-site representative.

~~The culvert area shall be drilled to determine type and thickness of the road and subgrade materials, soil types below the road, depth to bedrock and potential contaminants which may affect safety or disposal during construction.~~

BORINGS. The drilling method shall use hollow stem augurs, or the contractor may propose an alternative method in the work plan for approval by USACE. The contractor shall advance the borings to

¹Chemical samples consisting of a pint jar shall also be collected from each borehole.

²A Shelby Tube sample is required of any clay layer with a thickness of 2 feet or greater. The preferred depths shall be 5-7 feet or directly above bedrock.

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refusal at the top of bedrock (approximately 8 feet). All boring locations shall be sketched by the Contractor on a plan view of the site which is of suitable scale to clearly show boring locations in relation to site features. This sketch shall accompany the field logs upon completion of the drilling effort. All field logs and sketches shall be provided to the CO's field representative for review upon completion of the boring effort.

2.1 Geotechnical testing.

2.1.1 Standard Penetration tests. Standard penetration tests shall be performed in all borings. Standard penetration tests shall be taken continuously from the surface to bedrock refusal, but are not required at depths undisturbed samples are taken. A 3-inch nominal diameter split barrel sampler shall be used for all sampling. If laboratory analytical samples are required, a stainless steel sampler shall be used. Standard penetration tests shall be taken according to ASTM D1586-84 using a 140 pound hammer dropped 30 inches. At a minimum, one (1) pint-jar sample shall be taken from each split spoon sample. If a change of material occurs within a split spoon drive, then a representative sample of each material shall be taken. If no sample is retrieved at the specified interval, then the unsuccessful sample interval shall be augured out and another sampling attempt shall be made at the bottom of the failed sampling interval. Geotechnical samples shall be analyzed as specified in section TESTING of this SOS. Pint jars shall be sealed air tight with at least three wraps of electrical tape. Nylon reinforced tape shall not be allowed. Sample jars shall be properly labeled with the project name, hole number, depth of sample, etc. Shipping boxes and sample jars shall be clearly labeled as potentially contaminated material to alert the shipping company and geotechnical testing lab. When refusal is encountered during drilling or sampling, an attempt shall be made to identify the material as to its type and occurrence (bedrock, boulder, etc.). Upon determining the reason for refusal, the boring may be offset, augured down to the desired depth, and drilling/sampling continued.

2.1.2 Undisturbed Samples. Three-inch nominal diameter thin-wall Shelby tube samplers shall be used to obtain undisturbed samples of all clay layers 2 feet thick or greater in the borings specified in the table above. Should a Shelby tube sample not be obtained, collected improperly or be of sub-par standard, it shall be obtained from a new boring offset within 5 feet from the original boring. The offset boring shall be drilled/sampled after all activities have been completed for the original boring. Undisturbed samples are to be taken in accordance with ASTM D 1587-83. The pressure exerted (psi) and the time duration (seconds) required to push the Shelby tubes a distance of two feet shall be recorded on the drill log. All Shelby tube samples shall be sealed with expandable packers, secured with plastic end caps, and wrapped with at least 3 wraps of electrical tape. Shipping and/or transport of undisturbed samples shall ensure minimum disturbance which may compromise sample integrity. Samples shall be labeled

similarly to sample jars specified above and also be identified as potentially contaminated materials.

2.1.3 Sample Handling. All samples shall be properly labeled (project, hole number, depth, etc.) and delivered in person or shipped air freight prepaid to a laboratory pre-approved by the Corps of Engineers, in accordance with ASTM D 5079, within 5 days after completion of all drilling/sampling activities. Precautions should be taken to ensure that all samples obtained do not freeze in cold weather. Failure to properly collect, package, or transport samples properly as defined by the CO's representative or laboratory shall result in the contractor re-collecting unapproved samples at no cost to the government.

2.1.4 Field Logs. A complete and accurate field log for each boring shall be prepared by a qualified, experienced geologist or geotechnical engineer. The field logs shall be prepared on standard Corps of Engineers log forms (enclosed). All relevant information blanks in the log heading and log body shall be completed. Each log shall include the name of the project, hole number, location of boring (including boring offset if necessary), location of each sample, standard penetration test blow counts, pressure and time duration for obtaining Shelby tube samples, type of drill rig, size and type of bits/samplers used, diameter of boring and depths where hole diameter changes, water level measurements (see Section 3 below), intervals of hole instability, any special drilling or sampling problems including a description of the problem resolution, and a description of the materials. All field logs shall be signed by the preparer.

All log entries shall be printed. Photo reproductions shall be clear and legible. Illegible or incomplete logs shall not be accepted. Borings shall not be accepted by the USACE before the drilling logs are approved.

Borehole depth information shall be from direct measurements accurate to one-tenth of a foot.

Log scale shall be one inch equals one foot.

Each and every type of material encountered shall be described in column c of the log form. Material types are to be logged directly from samples and indirectly interpolated using professional judgement, drill cuttings, drill action, etc., between sampling intervals.

Unconsolidated materials shall be described as outlined below and in the following sequence:

Descriptive USCS classification in accordance with ASTM D 2488-84;

Consistency of cohesive materials or apparent density of non-cohesive materials;

AR309113

Moisture content assessment, e.g., moist, wet, saturated, etc.;

Color;

Other descriptive features (bedding characteristics, organic materials, macrostructure or fine-grained soils e.g., root holes, fractures, etc.);

Depositional type (alluvium, till, loess, etc.).

Stratigraphic/lithologic changes shall be identified in column c by a solid horizontal line at the appropriate scale depth on the log which corresponds to measured borehole depths at which changes occur, measured and recorded to the nearest one-tenth of a foot. Gradational transitions, changes identified from cuttings or methods other than direct observation and measurement shall be identified by a horizontal dashed line at the appropriate scale depth based on the best judgement of the logger. All lines shall be drawn with a straight edge and not by free hand.

Logs shall clearly show in columns e and f, the depth intervals from which all samples are retained.

Logs shall show total depth of penetration and sampling. The bottom of the hole shall be clearly identified on the log with the notation "Bottom of Hole".

Any special drilling or sampling problems shall be recorded on logs, including descriptions of problem resolutions.

Soil materials shall be classified using the Unified Soil Classification System. Soil descriptions are to follow ASTM D 2488-84. Descriptions of the material shall include classification, consistency or density, plasticity, moisture content, color, etc. Descriptions are to be based on visual inspection of material in the field and on blow counts of the standard penetration tests.

Groundwater information shall be recorded during drilling. The depth at which water is first encountered and the water level at completion of drilling shall be recorded on the drill log. The borings shall be left open overnight (approximately 24 hrs), and a final water level measurement obtained. Logs shall include time-lapse between the completion of drilling and water measurement including the depth to any caving of the hole.

Borings shall be backfilled with remaining drill cuttings. The cuttings shall be tamped to reduce volume and eliminate voids. The remainder of the boring shall be grouted and a marker (i.e. stake with flagging) placed in the grout identifying the boring for surveying purposes.

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2.1.5 Utility Clearance. The drilling locations shall be staked in advance by the Corps of Engineers' on-site representative. Utility clearances and any other requirements (ie. drilling permits etc.) for access and/or drilling shall be obtained by the contractor.

2.1.6 Magnetometer Survey. A magnetometer survey shall be required for both the treatment building areas and the trench alignment. The survey shall identify locations of potentially buried drums. The survey shall utilize a proton (nuclear) precession magnetometer, **equal or better technology**. The survey shall be completed prior to drilling to identify any problem areas (ie. buried drums, piping etc.) and assist in identifying the most advantageous locations for construction. The contractor shall prepare and submit **enough survey information within 24 hours which can be used by USACE for assessment prior to the drilling investigation presenting all survey activities, equipment, data, results and interpretations.** The Contractor must submit a report which summarizes the survey.

2.1.7 Additional Requirements.

GROUT. Cement grout shall be placed in the bore hole from the top of the tamped drill cuttings to the ground surface. The cement grout shall consist of a mixture of Portland Cement (ASTM C 150) and water in the proportion of not more than 7 gallons of approved water per bag of cement (94 pounds). Additionally, 3 percent by weight of sodium bentonite powder shall be added unless prohibited by state or local regulations. The grout shall be placed to eliminate voids or settling.

SITE RESTORATION. Upon completion of the boring operation, the Contractor shall return the site to its pre-operative condition before departing the site. The site restoration is subject to the approval of the Contracting Officer's field representative.

SAFETY. The Contractor shall comply with all applicable safety standards and the Corps of Engineers Safety Manual (EM 385-1-1) dated October 1992. The Site Safety and Health Plan provided in this SOS shall be strictly followed.

TESTING. All sample testing shall consist of grain size distribution, moisture content, unconfined compressive strength, and consolidation/swell. The testing shall be performed in accordance with ASTM Standards D 421, 2216, D 2166, and 2435 respectively. The following table contains the required tests as well as the number of tests.

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REQUIRED GEOTECHNICAL TESTING		
Test	Samples	No. of Tests
ASTM D421 Grain Size Analysis	All samples	16
ASTM 2216 Moisture Content	All samples	16
ASTM 2166 Unconfined Compressive Strength	Shelby samples taken at foundation locations	4
ASTM 2435 Consolidation\Swell Testing	Shelby samples taken at foundation locations	4
Sulfate Ion Content	All samples taken at foundation locations	8

Five (5) copies of all laboratory geotechnical analyses shall be forwarded to the following address upon completion of testing:

By overnight courier: U.S. Army Corps of Engineers
CEMRO-CD-FC (Shaheen)
Bldg. 525, Castle Hall, 3rd Floor
Offut AFB, NE 68113

(402) 293-2517

By U.S. Postal Service: U.S. Army Corps of Engineers
CEMRO-CD-FC (Shaheen)
P.O. Box 13287
Offut AFB, NE 68113-0287

The contractor shall be responsible for procuring a suitable geotechnical laboratory. The laboratory shall be capable of performing all tests specified above on soils potentially contaminated with constituents identified at the site. The contractor shall submit the laboratory name and address for approval in the work plan. Upon completion of testing, the sample material shall be returned to the site by the Contractor. The

AR309116

Contractor shall place the material on the stockpile previously designated.

3. **Reports.** A very brief field report shall be written by the contractor summarizing site conditions encountered, work performed, problems encountered during drilling and sampling, and the solutions used to resolve the problems. The report shall also include all completed documentation, including but not limited to, drill logs, permits, chain of custody documentation, analytical results, geotechnical results, sample transmittals and site maps.

AR309117

HTRW DRILLING LOG				DISTRICT		HOLE NUMBER	
1. COMPANY NAME				2. DRILL SUBCONTRACTOR		SHEET SHEETS OF	
3. PROJECT				4. LOCATION			
5. NAME OF DRILLER				6. MANUFACTURER'S DESIGNATION OF DRILL			
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT				8. HOLE LOCATION			
				9. SURFACE ELEVATION			
				10. DATE STARTED		11. DATE COMPLETED	
12. OVERBURDEN THICKNESS				15. DEPTH GROUNDWATER ENCOUNTERED			
13. DEPTH DRILLED INTO ROCK				16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED			
14. TOTAL DEPTH OF HOLE				17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)			
18. GEOTECHNICAL SAMPLES		DISTURBED		UNDISTURBED		19. TOTAL NUMBER OF CORE BOXES	
20. SAMPLES FOR CHEMICAL ANALYSIS		VOC		METALS		OTHER (SPECIFY)	
						OTHER (SPECIFY)	
22. DISPOSITION OF HOLE		BACKFILLED		MONITORING WELL		23. SIGNATURE OF INSPECTOR	
LOCATION SKETCH/COMMENTS						SCALE:	
PROJECT						HOLE NO.	

(CONTINUATION SHEET)

HOLE NUMBER

INSPECTOR

SHEET SHEETS
OF

ELEV.
(4)

DEPTH
(N)

DESCRIPTION OF MATERIALS

**FIELD SCREENING
RESULTS**
(4)

GEOTECH SAMPLE
ON CORE BOX NO.
(4)

ANALYTICAL
SAMPLE NO.
(16)

BLOW COUNT
100

REMARKS
 EN

PROJECT

HOLE NO.

APPENDIX L

MONITORING WELL BORING LOGS

AR309121

CAMP

PROJECT NUMBER
PHL03148.FLFT

BORING NUMBER
MW-5

SHEET 1 OF

SOIL BORING LOG

PROJECT Boarhead Farms RIFS

LOCATION Upper Black Eddy, PA

ELEVATION Ground=540.31; TOC=542.20

DRILLING CONTRACTOR Hardin-Huber

DRILLING METHOD AND EQUIPMENT Mobile B-80 ATV, 140lb hammer/2" spoon, 4 1/4" ID sampling HSA, 8 1/4" HSA, 8" air hammer

WATER LEVELS 7.22 8/31/93

START 7/22/93

FINISH 7/22/93

LOGGER M. Bormack

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 0"-0"-0"-0" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	TYPE AND NUMBER	RECOVERY			
0					0-1.2' 2" organic layer, N7, <u>SILT WITH CLAY</u> , (ML), soft, no dry strength, dry, grading to <u>CLAYEY SILT</u> (ML), moderate stiff, low plasticity, mottled N7 and 5YR 5/6	@ 0750 start with 4 1/4" ID HSA @ 0800 HNU=0ppm
2		1-S	1.2	3-6-6-9 (12)		
4		2-S	1.8	10-17-20-20 (37)	2-3.5' same as above, moist, grading to as above with weathered black medium to coarse sand grains pyroxene, moist, some Fe-oxide staining	@ 0805 HNU=0ppm
6		3-S	1.5	10-38-51/3" (48)	4-5.5' same as above, moist, increased oxide staining 5GY 4/1	@ 0815 HNU=0ppm
8		4-S	0.5	51/8"	6-6.5' <u>SAPROLITE/WEATHERED BEDROCK</u> , wet	@ 0825 first water at 6' BGS HNU=0ppm
10		5-S	0	51/2"		@ 0830 spoon refusal @ 0835 auger refusal at 9.5' BGS, ream with 8 1/4" ID HSA
12						@ 0900 end boring at 9.5' BGS

AR309122

CHM FULL

PROJECT NUMBER
PHL63148.FLFT

BORING NUMBER
NW-6

SHEET 1 OF 1

SOIL BORING LOG

PROJECT Boarhead Farms RIFS

LOCATION Upper Black Eddy, PA

ELEVATION Ground=541.85; TOC=543.05

DRILLING CONTRACTOR Hardin-Huber

DRILLING METHOD AND EQUIPMENT Mobile B-80 ATV, 140lb hammer/2" spoon, 4 1/4" ID sampling HSA, 8 1/4" HSA, 8" air hammer

WATER LEVELS 8.42 8/31/83

START 7/21/83

FINISH 7/21/83

LOGGER M. Barnack

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 8" - 8" - 8" - 8" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
	IN	TYPE AND NUMBER	RECOVERY			
0		1-S	1.7	3-3-4-5 (7)	0-1.7' CLAYEY SILT (ML), organic silt top 2", mottled N7/5YR 5/6, dry, low plasticity, moderate stiff	@ 1440 start with 4 1/4" ID HSA HNU=0ppm
2		2-S	1.8	3-10-12-25 (22)	2-3.8' same as above, moist, Fe-oxide stain grades in, grading to slightly saprolitic with extreme weathering of dark pyroxene minerals	@ 1445 HNU=0ppm
4		3-S	1.0	28-51/5"	4-5.0' SAPROLITE/WEATHERED DIABASE, moist to wet	@ 1500 HNU=0ppm
6		4-S	0.18	51/2"	6-8.18' same as above, wet clay from weathered plagioclase and black pyroxene minor quartz, soft	first water at 5' BGS
8		5-S	0.2	51/12"	8-8.2' same as above, wet, weathered bedrock	@ 1520 auger refusal at 8' BGS, ream with 8 1/4" ID auger
10						@ 1530 end boring at 8' BGS

AR309123

CHM 11 L

PROJECT NUMBER

PHL03148.F1.FT

BORING NUMBER

MW-14

SHEET 1 OF 1

SOIL BORING LOG

PROJECT Boorhead Farms RIFS

LOCATION Upper Black Eddy, PA

ELEVATION Ground=574.51; TOC=576.82

DRILLING CONTRACTOR Hardin-Huber, Inc.

DRILLING METHOD AND EQUIPMENT Mobile B-80 ATV, 140lb hammer/2" spoon, 4 1/4" ID sampling HSA, 8 1/4" HSA, 6" air hammer

WATER LEVELS 17.80 8/31/93

START 7/26/93

FINISH 7/27/93

LOGGER M. Bormack

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 5'-5'-5'-5' (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	TYPE AND NUMBER	RECOVERY			
0-5	2	1-S	1.5	3-9-11-12 (20)	0-1.5' CLAYEY SILT (ML), 10Y 4/2 dry to moist, trace wood, moderately plastic, soft	@ 1550 start with 4 1/4" ID HSA @ 1555 OVM=0
5-10	4	2-S	0.2	18-15-21-40 (36)	2-2.2' 3" quartz cobble, trace same as above, moist	@ 1557 OVM=0 @ 1605-1610 OVM=0 @ 1610 split spoon and auger refusal at 4.5' BGS, following 8 1/4" ID HSA, ream and switch to air
10-15	8	3-S	0.5	43/8"	4-4.5' SILTY CLAY (CL), 5Y 4/4 and 5GY 4/1 moist, salt and pepper, weathered, moist bedrock	@ 1635 resume with 8"
15-20					8' DIABASE, dry phaneritic, meso-melanocratic, sub-anhedral crystals of pyroxene, plagioclase, gray quartz, mostly weathered faces	@ 1640 HNV=0 8-10 min/ft 8-10 min/ft @ 1700 HNU=0, 8-10 min/ft @ 1715 HNU=0, 8-10 min/ft @ 1730 HNU=0, 8-10 min/ft @ 1745 HNU=0, 8-10 min/ft End @ 1800 on 7-26-93
20-25					15' same as above, subhedral, fresh face crystals, more vitreous luster	@ 0730 resume drilling 7-27-93 @ 0733 OVM=0, 10-12 min/ft @ 0745 OVM=0, 10-12 min/ft 10-12 min/ft @ 0830 OVM=0, 10-12 min/ft
25-30					20' same as above	@ 0850 stop drilling, pull rods, wait for water...dry @ 1015 resume drilling OVM=0 @ 1030 OVM=0
30-35					25' same as above, solid rock with no noticeable fractures	@ 1130 OVM=0 @ 1230 pull rods, wait for water...dry

AR309124

CH2M HILL

PROJECT NUMBER
PHL03148.FLFIBORING NUMBER
NW-14

SHEET 2 OF 2

SOIL BORING LOG

PROJECT Boarhead Farms RIFSLOCATION Upper Black Eddy, PAELEVATION Ground=574.51; TOC=578.82DRILLING CONTRACTOR Hardin-Huber, Inc.DRILLING METHOD AND EQUIPMENT Mobile B-80 ATV, 140lb hammer/2" spoon, 4 1/4" ID sampling HSA, 6 1/4" HSA, 8" air hammerWATER LEVELS 17.80 8/31/93START 7/28/93FINISH 7/27/93LOGGER M. Bormack

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 0" - 0" - 0" - 0" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
	INTERVAL	TYPE AND NUMBER	RECOVERY			
30.0					30' same as above	@ 1340 hole still dry @ 1450 resume drilling from 30' BGS @ 1500 OVM=0 ~ 15 min/ft @ 1530 OVM=0 ~ 15 min/ft
35.0					35' same as Above	@ 1600 OVM=0
40.0					40' same as above	@ 1700 OVM=0
45.0					45' same as above, wet	@ 1800 OVM=0 @ 1800 OVM=0 rock soft/fracture? @ 1930 first water @ 1945 end boring at 48' BGS OVM=0
48.0	48					
50.0						
55.0						

AR309125

PROJECT NUMBER

PH 03/48 FLET

BORING NUMBER

NW-17

SHEET 1 OF 1 Boring H

SOIL BORING LOG

PROJECT Boardhead Farms RIFS

LOCATION Upper Black Eddy, PA

ELEVATION Ground=558.91; TOC=580.91

DRILLING CONTRACTOR Hardin-Huber, Inc.

DRILLING METHOD AND EQUIPMENT Mobile B-80 ATV, 140lb hammer/2" spoon, 4 1/4" ID

WATER LEVELS 9.74 8/31/93

START 7/28/93

FINISH 7/28/93

LOGGER M. Bormack

DEPTH BELOW SURFACE (FT)	SAMPLE			BLOW COUNTS	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE DRILLING FLUID LOSS TESTS AND INSTRUMENTATION
	INTERVAL	NUMBER AND TYPE	RECOVERY (FT)	12-INCH INTERVAL		
50	0				0-1' CLAYEY SILT (ML), 5YR 4/4, non-plastic with increasing 5GY 8/1 saprolite with Fe-oxide stained minerals, dry	@ 1445 start with 4 1/4" ID HSA
	2	1-S	1.0	3-8-8-10		@ 1450 OVM=0
					2-3.9' same as above, moist, increasing saprolite and weathered oxidized minerals	
	4	2-S	1.2	7-9-13-28		@ 1455 OVM=0
					4-5' SAPROLITE/plagioclase-weathered clay grading to weathered bedrock	@ 1500 split spoon refusal at 4.9' BGS
	6	3-S	1.0	27-51/5'		@ 1510 auger refusal at 6' BGS
100					6' DIABASE, weathered bedrock crumbly rock, weathered crystals faces of plagioclase, (some clay), pyroxene, quartz	@ 1515 ream hole with 6 1/4" ID switch to 6" OD tricone roller bit with air
						OVM=0
150					11' DIABASE, competent phaneritic, meso-melanocratic, subhedral crystals	first water at 11' BGS
						@ 1530 switch to 6" OD air hammer, OVM=0
						@ 1545 OVM=0
	15					@ 1515 end boring at 15' BGS

AR309126

CHM 1011

PROJECT NUMBER
PHL83148.F1.F1

BORING NUMBER
MW-20

SHEET 1 OF 1

SOIL BORING LOG

PROJECT Boarhead Farms RIFS

LOCATION Upper Black Eddy, PA

ELEVATION Ground=555.03; TOC=557.05

DRILLING CONTRACTOR Hardin-Huber, Inc.

DRILLING METHOD AND EQUIPMENT Mobile B-80 ATV, 140lb hammer/2" spoon, 4 1/4" ID sampling HSA, 6 1/4" HSA, 8" air hammer

WATER LEVELS 11.58 8/31/93

START 7/28/93

FINISH 7/28/93

LOGGER M. Bormack

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 6" - 8" - 8" - 8" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	TYPE AND NUMBER	RECOVERY			
0					0-1.7 <u>CLAYEY SILT</u> (ML), 5YR 4/4 dry few rock fragments grading to slightly saprolitic with some wood at base of spoon	@ 1020 start 4 1/4" ID HSA
2		1-S	1.7	2-6-7-7 (13)		@ 1025 OVM=0
4		2-S	1.5	2-1-4-8 (5)	2-3.5 same as above, becoming increasingly more plastic and <u>CLAYEY TO SILTY CLAY</u> (CL), with weathered diabase fragments N8 and 5YR 5/8	@ 1035 OVM=0
6		3-S	1.8	3-18-27-28 (43)	4-5.8 <u>SILTY CLAY</u> (CL), with saprolitic texture, stiff, brittle (non-plastic), weathered rock, 5GY 4/1 (rock), 5YR 4/4 (soil)	@ 1035 auger and split spoon penetration refusal at 6" BGS, ream with 6 1/4" ID HSA ream
8		4-S	0	51/0"	6" <u>DIABASE</u> , extremely weathered, 5GY 4/1 and Fe-oxide stained rock, weathered pyroxene, plagioclase, and plagioclase-weathered clay quartz, loose, some fragments	@ 1045 switch to 8" air hammer
10						0.5'/min
12						@ 1100 first water at 11' BGS
14						@ 1105 OVM=2ppm over hole @ 1105 OVM=<1.5ppm breathing space
16					15' <u>DIABASE</u> , phaneritic, meso-melanocratic, subhedral crystals, competent	0.25'/min
18						@ 1110 end boring at 15' BGS @ 1115 borehole collapses 14.5'-15' BGS

AR309127

CML-11

PROJECT NUMBER

PHL 83148 ELET

BORING NUMBER

MW-21

SHEET 1 OF 1

SOIL BORING LOG

PROJECT Boarhead Farms RIFSLOCATION Upper Black Eddy, PAELEVATION Ground=584.81; TOC=588.71DRILLING CONTRACTOR Hardin-HuberDRILLING METHOD AND EQUIPMENT Mobile B-80 ATV, 140lb hammer/2" spoon, 4 1/4" ID sampling HSA, 6 1/4" HSA, 8" air hammerWATER LEVELS 11.48 8/3/93START 7/29/93FINISH 7/29/93LOGGER M. Bormack

DEPTH BELOW SURFACE (FT)	SAMPLE			STANDARD PENETRATION TEST RESULTS 8"-8"-8"-8" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS AND INSTRUMENTATION
	INTERVAL	TYPE AND NUMBER	RECOVERY			
0					0-1.3' <u>CLAYEY SILT</u> (ML), dry, mottled, (N8 and 5YR 4/4) soft, trace wood, roots	@ 1820 start with 4 1/4" ID HSA OVM=0ppm
2		1-S	1.3	1-1-3-5 (4)		
4		2-S	1.8	3-7-10-8 (17)	2-3.6' same as above, stained black and green, slight solvent odor but no PID reading, slightly saprolitic at base	@ 1825 OVM=0ppm
6		3-S	2.0	3-8-7-9 (13)	4-6' same as above, natural color, dry	@ 1840 OVM=40 ppm in spoon OVM=0ppm, breathing space
8		4-S	1.8	7-7-7-10/5" (14)	6-7.8 <u>SAPROLITE</u> to weathered rock at base, 5YR 4/4 and 5GY 8/1, moist	@ 1842 OVM=50ppm in spoon OVM=10 ppm over hole OVM 0-1ppm breathing space @ 1845 auger spilt spoon penetration refusal at 8' BGS, ream with 6 1/4" ID HSA and switch to air
10					8' <u>DIABASE</u> , weathered meso-melanocratic	@ 1850 OVM=2-5ppm @ 1855 OVM=30-50-185ppm @ 1700 resume with air hammer
12					10' <u>DIABASE</u> , phaneritic, meso-melanocratic, pyroxene, plagioclase, quartz, somewhat weathered, some Fe-oxide stain, subhedral, competent	@ 1705 OVM=0ppm @ 1715 OVM=0ppm, 8 min/ft @ 1730 OVM=0ppm, 8 min/ft
14					15' same as above, fresh, subhedral crystals	@ 1830 Stop drilling at 15' BGS, check for water...dry, air hammer cracked discontinue drilling
16						@ 0700 on 7-30-93, water accumulated in borehole, overnight, set well

AR309128

APPENDIX M
SPECIFICATIONS FOR
RESIDENTIAL WELL TREATMENT SYSTEMS

AR309129

SPECIFICATIONS FOR RESIDENTIAL WELLS TREATMENT SYSTEMS

1. SUMMARY

Under this delivery order with the Government, the Contractor shall provide permanent reliable groundwater treatment systems and temporary service for the 16 privately-owned properties identified in Attachment #1. The properties are adjacent to the Boarhead Farms Superfund Site in Upper Black Eddy, Bridgeton Township, Bucks County, Pennsylvania. The locations of the properties are shown in Attachment #1. A competitive bid process through vendors shall be implemented by the Contractor for the installation and service of the water treatment systems. The method of treatment, the design, and the installation of the treatment system for each property shall be the responsibility of the Contractor. The level and performance of the treatment systems shall comply with requirements stated herein. The treatment systems shall be maintained for a duration of 1 year. All treatment equipment shall be purchased, not rented, and shall be permanently installed to remain after the completion of this delivery order. Requirements under this delivery order shall include, but not be limited to, the following:

- (a) Technical Requirements for Groundwater Treatment
- (b) Initial Investigation/Work Requirements
- (c) Site Investigations
- (d) Vendor Bid Solicitation and Review
- (e) Treatment System Installations
- (f) Operation and Maintenance
- (g) Reports
- (h) Submittals

2. TECHNICAL REQUIREMENTS FOR GROUNDWATER TREATMENT SYSTEMS

The objective of this delivery order is to treat private residence's potable water supplies through wellhead treatment. The new equipment required shall be installed downstream of the existing hydropneumatic tanks. Ancillary modification of existing piping shall be conducted, as required to provide treated water to all possible potable water connection points at each residence.

2.1. Minimum Treatment System Requirements. Groundwater treatment for each residence shall be provided by activated carbon systems. Carbon treatment systems shall consist of, as a minimum, two (2) carbon canisters in series. Where high iron and manganese concentrations are present, treatment systems shall also include ion-exchange or pre-softening equipment to reduce hardness and to prevent premature plugging of the carbon treatment beds. To the maximum extent possible, individual system design for each

AR309130

residence shall be similar and utilize identically sized components. The following shall be included in the design and installation of each residential treatment system:

- a). Provide a "bypass piping system" for the treatment system. The bypass shall enable the lead/lag canister to be changed. Provisions shall be made to prevent the occupants from bypassing the treatment system.
- b). Provide sampling ports on the influent line, between the carbon units, and between different treatment units (if required).
- c). Provide a totalizing flow water meter for each treatment system.
- d). Provide a minimum of 2 hours of training to occupants to ensure that the treatment systems are operated properly.

2.2. Performance. The treatment systems shall be designed to primarily remove the contaminants of concern. All sixteen (16) treatment systems shall be designed based on the expected influent quality for bis(2-ethylhexyl)phthalate and shall meet the effluent requirements. Only those wells where the sampling results indicate chloromethane is present shall be treated for this contaminant of concern and shall meet the effluent requirements. The treatment systems shall be designed for the estimated maximum flowrates and daily water usage rates for each residence. The expected influent quality listed below are the only contaminants of concern that exceed either health risk based values or Maximum Contaminant Levels (MCLs).

Treatment Requirements Residential Wells Boarhead Farms Upper Black Eddy, PA			
Contaminant of Concern	Expected Influent Quality (ug/L)	Effluent Requirements (ug/L)	Residential Wells Impacted RW #
Chloromethane	720	1.4 ¹	RW7, RW25
Bis (2-ethylhexyl)phthalate (BEPH)	74	6 ²	RW1,RW7,RW11,RW16, RW21,RW22,RW23,RW25, RW27,RW28,RW34,RW35, RW52,RW54,RW74,RW79

¹ USEPA Region Three, Risk Based Concentration Table, October 20, 1995, Tap Water Exposure Scenario, 10⁻⁶ Risk

² USEPA MCL

2.3. Treatment Reliability. The treatment systems provided under this delivery order shall be reliable and continuously operate under the specified performance requirements.

3. INITIAL INVESTIGATION/WORK REQUIREMENTS

3.1. Existing Sampling Results. All residential wells were sampled to determine the nature of ground water contamination at each residence. Reference Attachment #2 for the sampling results.

3.2. Resident Survey and Contact. For preparation of the preliminary treatment systems and development of the Vendor bid documents, the Contractor shall survey each property owner with a questionnaire to determine existing parameters of each residence's well and water distribution system. Prior to mailing of questionnaires, previous EPA survey results sent to each residence shall be reviewed to preclude unnecessary duplication of questions. Resident contact through phone conversations or in person shall be limited where possible. The initial contact with the residents shall be by the USEPA-Region III. After that has transpired, direct contact with the residents will be by the Contractor/Vendor pending the outcome of the initial USEPA contact.

3.3. Defining Preliminary Treatment Systems. Prior to development of Vendor bid documents, the Contractor shall determine the proposed treatment systems for each residence. Where feasible, treatment systems shall be located inside the residences. The design of the treatment system shall be based on the contaminants of concern and shall vary based on flowrate. Any existing systems (UV units, softening units, etc.) that are currently being used at residences shall be analyzed to determine the operational capability and/or applicability to the new required treatment system. The existing systems shall be incorporated into the new systems, when feasible.

4. VENDOR BID DOCUMENT DEVELOPMENT

The Contractor shall develop documents to allow solicitation of Bids from a minimum of two (2) Vendors. The documents shall include, but not be limited to, the following:

- a). Expected Influent quality and effluent requirements.
- b). Thorough definition of each residence's well and distribution system including flowrate and daily usage. Include existing well system component capacities and operating parameters (i.e. pumps, hydropneumatic tanks, hydraulic operating parameters, piping, any existing treatment items, etc.) for each residence.
- c). Proposed treatment system required for each residence.
- d). Proposed location of equipment installation.

Prior to distribution to Vendors, bid documents shall be submitted to the Government for approval and review.

5. VENDOR BIDS PROPOSALS

Vendor bid proposals shall be developed based on a site visit to the residences with the Contractor. Submitted proposals shall include the following for technical evaluation by the Contractor and the Government:

- a). Design calculations supporting treatment equipment selection including carbon usage rates.
- b). Manufacturer's technical information sheets on treatment system equipment.
- c). Sketches outlining installation of equipment and connection to existing system.
- d). Statement of treatment reliability and frequency of on-site service and support.
- e). Electrical work required for treatment equipment installation, including one line diagrams and equipment list.
- f). Proposed Implementation Schedule including Installation.
- g). Statements of any Supplemental Agreements with other vendors, etc.
- h). Separate bid line items for the treatment equipment, installation, disposal, and O&M requirements.

6. TREATMENT SYSTEM INSTALLATION

All equipment and materials utilized for the treatment systems shall be supplied as permanently installed equipment. All such equipment and materials shall be of high quality and workmanship, designed and suited for the intended purpose, and shall comply with all applicable construction and work safety standards. Materials and workmanship for piping modification shall meet local plumbing codes for similar work.

6.1. Interruption of Existing Utilities During Installation. Installation of necessary treatment equipment shall minimize interruption in service of the existing water supply system to the properties. The Contractor shall submit written notification to the Resident/Owner and the Contracting Officer's Representative (COR) not less than 5 working days in advance of each interruption of water service. No single outage will exceed 4 hours unless approved in writing. The time and duration of all outages will be coordinated with the Resident/Owner by the Contractor.

6.2. Utilities/Energy Supply. Where electric power is required for the treatment equipment, the Contractor shall utilize the existing electric power system available to the residence. The Contractor shall ensure that all new electrical work required for connection of treatment system complies with the National Electrical Code, National Electrical Safety Code, and all other local codes. The cost of electrical power will be borne by the Residence/Owner.

7. OPERATION AND MAINTENANCE

Following installation of treatment systems, the Contractor shall be responsible for, as a part of this delivery order, complete operation and maintenance of the systems providing treatment. The duration of this responsibility shall be for the entire length of the awarded delivery order. Responsibility shall include providing all necessary chemicals, maintenance, repairs or replacement, and monitoring of treatment performance to ensure performance requirements are continuously met. In addition, the maintenance contract shall include supplying and maintaining any softening chemicals and equipment required for any new water softening systems installed.

7.1. Performance Monitoring. Provisions shall be included in the treatment system to monitor the performance of the treatment systems. Provisions or actions (i.e. excess capacity, or increasing the frequency of on-site inspection/performance monitoring) shall be incorporated to prevent breakthrough of the contaminant of concerns and to ensure that the treated water continuously meets all performance standards specified. The two performance monitoring locations shall be RW25 and RW52. If the results of the samples indicate breakthrough in the lead/lag carbon canister, all sixteen (16) treatment unit lead/lag carbon canisters shall be replaced at that time. Sampling frequency shall be, but not limited to, the following for RW25 and RW52:

- a). Initially, after installation of treatment systems: 1-influent sample and 1- effluent sample.
- b). Six months after installation, or as based on the vendor's estimated breakthrough: 1-influent sample, 1-sample between the lead/lag carbon canisters, between the different treatment processes (if required), and 1-effluent sample.
- c). One (1) year after installation. (The carbon shall be replaced just prior to this sampling event in all treatment systems, and this sampling event and reporting of results will be the end of the O & M period for this delivery order): 1-influent sample and 1-effluent sample.

7.2. Carbon Replacement. The Contractor shall be responsible for the disposal or regeneration off-site, of any spent carbon, carbon cartridges or other hazardous wastes which are generated as a result of the operation of the water treatment systems. As a minimum, the carbon canisters shall be replaced at the end of one (1) year or just prior to when the carbon is thought to be spent by vendor calculations or as indicated by breakthrough sampling. All sixteen (16) carbon treatment units shall be replaced at once.

7.3. Interruption of Existing Utilities During Maintenance. Scheduled temporary interruptions are acceptable for periodic maintenance or repairs. These interruptions shall not exceed one hour in length and shall be coordinated with the Resident/Owner and the COR, a minimum of 5 working days prior to the scheduled interruption. Treatment interruptions, as a result of system failure, shall be repaired or replaced within 24 hours of

notification. The Contractor shall be responsible for providing water service at the specified delivery rate and of equal or better quality in the event that repair or replacement exceeds the allowable 24-hour limit.

8. SUBMITTAL REQUIREMENTS

The following shall be submitted to the Government for approval:

- a). Main Work Plan *\GA2*\
- b). Sampling Results *\GA1*\
- c). Vendor Bid Solicitation Package *\GA2*\
- d). Vendor Bid Proposals *\GA1*\
- e). O&M Work Plan and Reports *\GA2*\

ATTACHMENTS:

- #1 List of Residences, Miscellaneous Information for the Residence, such as name, address, and telephone number, Map of property owners (immediate area including well locations/residences)
- #2 Individual Residential Well Sampling Analysis

ATTACHMENT #1

SIXTEEN (16) RESIDENTIAL WELLS

RESIDENCE NAME, ADDRESS, TELEPHONE NUMBER

LOCATIONS

MISC. INFORMATION

AR309136

Residential Well Locations Upper Black Eddy, PA			
Resident Name	Well Number	Well Depth (ft)	Monitoring Locations
Bowes	RW28	165	
Cichowski	RW22	575	
DeBoer	RW25	20	XXX
Fasano (a)	Old RW109 New RW52	400	XXX
Guth	RW23	345	
Johnson	RW7	420	
Lewis/Reidler (b)	RW74	420	
Martin	RW27	110	
Petner	RW35	200	
Schillinger	RW16	450	
Shafer/Ushman (c)	RW1	52	
Smith, Drew	RW34	400	
Swiantecke, Hank (a)	Old RW21 New RW108	475	
Todd	RW79	120	
Velasco	RW54	?	
Woods	RW11	400	
(a) Denotes new and old wells on same property. (b) Denotes tenant/owner names. (c) Denotes couple with two last names. XXX - Performance Monitoring Locations.			

AR309137

Residential Well Survey List Upper Black Eddy, PA						
Sta No.	Mailing Name and Address	Survey on File	Sampling Location	Miscellaneous Information	Owner Name and Address	Treatment System
RW1	Trisha Ushman/Wm Shafer 1220 Birch Rd Upper Black Eddy, PA 18972 Ph (610)982-9509	Yes	Outside Spigot on right	Former Owner: Randy Obrien 170 Birch Rd		None
RW7	Donna & Dana Johnson 1343 Lonely Cottage Rd Upper Black Eddy, PA 18972 Ph 610-982-9330	Yes	Outside Spigot on front not connected to fileter			Particle Filter
RW11	Eugeen & Virginia Woods 1235 Friendship Lane Upper Black Eddy, PA 18972 Ph 610-610-5107	Yes	Outside Spigot Unfiltered			Filter
RW16	Mike & Maureen Schillinger 1220 Friendship Lane Upper Black Eddy, PS 18972 Ph 610-982-5026 Township Supervisor	Yes	Outside Spigot	Have owner disconnect filter for outside spigot		Two charcoal filters under kitchen sink
RW21	Hank & Mary Swlantage 1367 Lonely Cottage Rd Upper Black Eddy, PA 18972 Ph 610-982-5466	Yes	Outside Spigot	.New Well Designated as RW108		None

AR309138

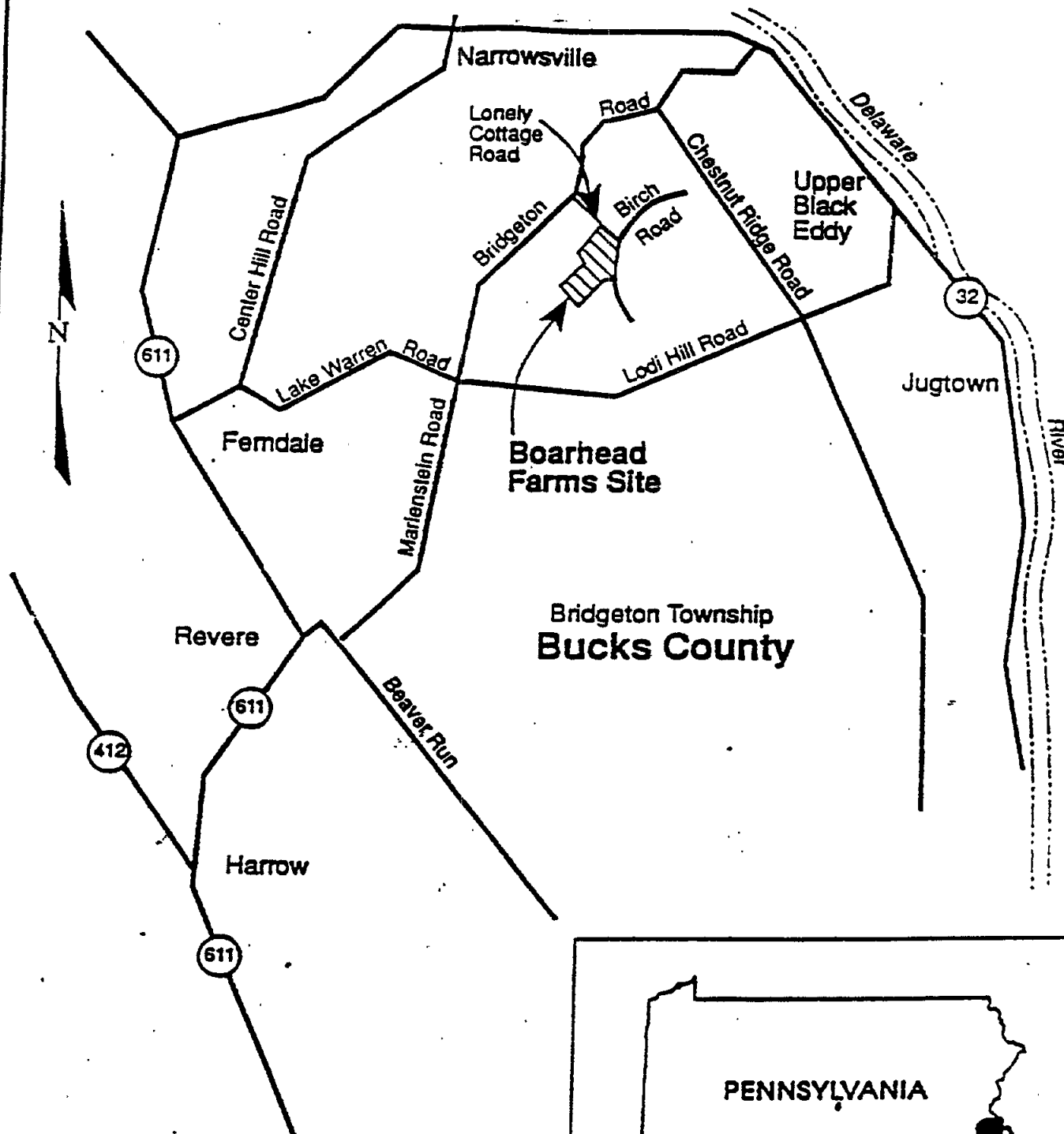
Residential Well Survey List
Upper Black Eddy, PA

RW22	Susan Cichowski 1271 Lonely Cottage Road Upper Black Eddy, PA 18972 Ph 610-982-5169	Yes	Outside Spigot Untreated			UV, Softener & Filtratio n System
RW23	Jacob & Barbara Guth 1245 Friendship Lane Upper Black Eddy, PA 18972 Ph 610-982-5493 Barb (Twp Supervisor)	Yes	Outside Spigot in Rear			None
RW25	John & Laurie DeBoer 1358 Lonely Cottage Rd Upper Black Eddy, PA 18972 Ph 610-982-5439	Yes	Outside Spigot next to Porch			Iron Filter softener & Chlorine
RW27	T. Martin 1277 Lonely Cottage Rd Upper Black Eddy, PA 18972 PH 610-982-9701	Yes	Outside Spigot turned on from inside the home		Cynthia Gordeuk Box 108	Softener Unknown if hooked up
RW28	Mary Bowes 1293 Lonely Cottage Rd Upper Black Eddy, PA 18972 Ph 610-982-5454	Yes	Kitchen Tap	Enter House with Caution Owner works nights		None
RW34	Debbie & Drew Smith 1315 Lonely Cottage Road Upper Black Eddy, PA 18972 Ph 610-982-9622	No	Outside Spigot Unknown if connected to filter	Formerly Alves Residence (Mother's Helpers Daycare)		Distiller & Filter
RW35	Francis & Margeret Petner 1331 Lonely Cottage Rd Upper Black Eddy, PA 18972 Ph 610-982-5462	Yes	Spigot in basement before treatment	Caution Large Dog "		Filter

AR309139

Residential Well Survey List Upper Black Eddy, PA						
RW52	Patrick Fasano 1285 Lonely Cottage Rd Upper Black Eddy, PA 18972 Ph 610-982-5492	Yes	Spigot in Rear of house near porch	New Well installed Mar '93 RW52 Old Well designated RW109		None
RW54	David Velasco 1235 Birch Rd Upper Black Eddy, PA 18972 Ph 610-982-5451	Yes	Outside Spigot in front			None
RW74	Dorothy Lewis (tenant) 1244 Birch Rd Upper Black Eddy, PA 18972 Ph 610-982-9541	No		Old well RW8 New well possibly connected to trailer	John & Janet Reidler 736 Lonely Cottage Rd Upper Black Eddy, PA 18972 Ph 610-847-2030	None
RW79	Eleanor Todd 1260 Birch Rd Upper Black Eddy, PA 18972 Ph 610-982-5376	Yes	Outside Tap			None

AR309140



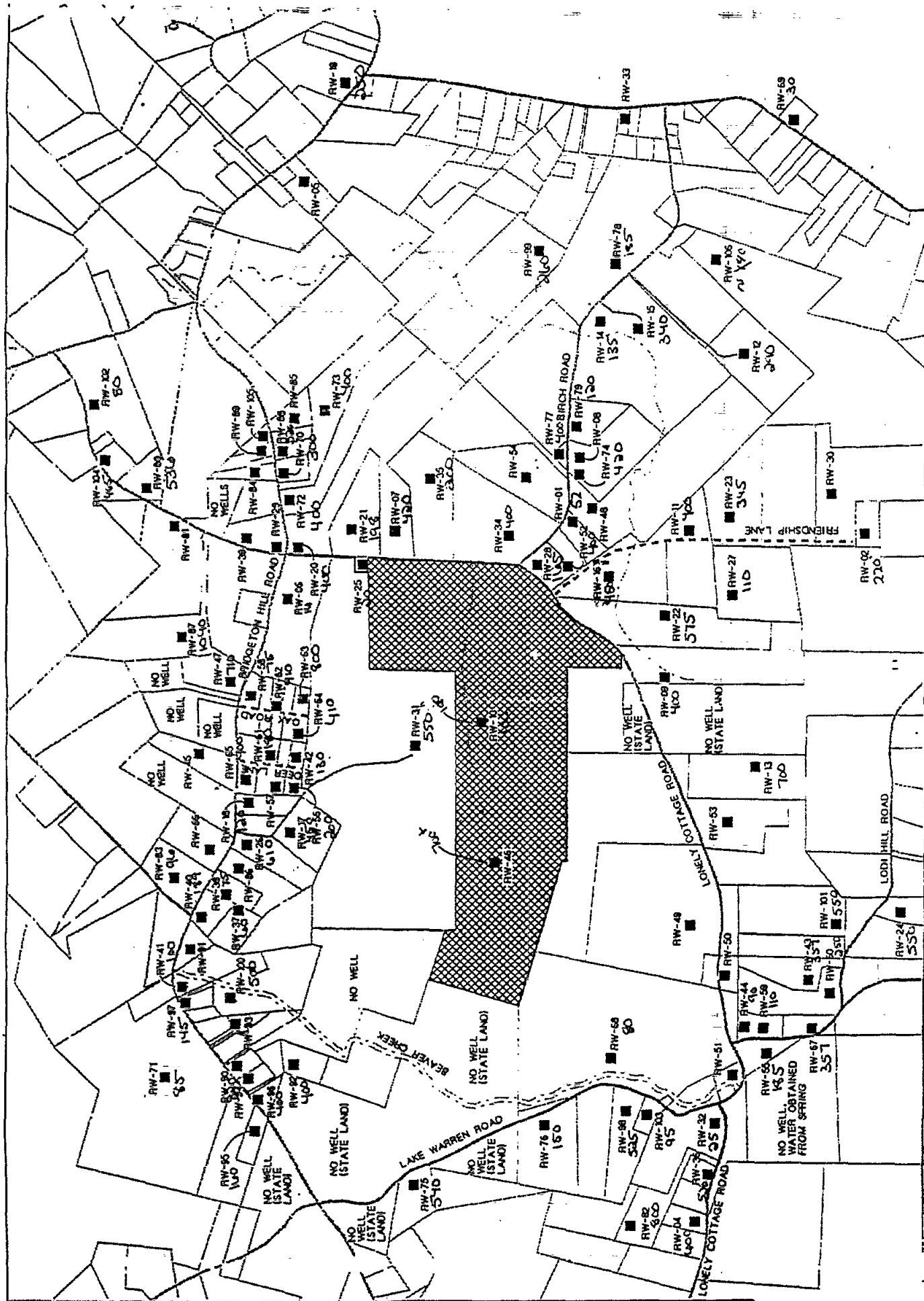
**Bridgeton Township
Bucks County**

**Boarhead
Farms Site**

PENNSYLVANIA

**Figure 1
LOCATION OF THE BOARHEAD
FARMS SUPERFUND SITE
BRIDGETON TOWNSHIP, PENNSYLVANIA**

AR309141



AR309142

ATTACHMENT #2

**INDIVIDUAL RESIDENTIAL WELL
SAMPLING RESULTS**

AR309143

BOARHEAD FARMS - 1993 & 1994
 DETECTED CHEMICALS ONLY & MCLS
 RW-01
 03-May-95

U + B - Non Detects B - found in blank
 I - estimated value R - rejected

SAMPLE ID:
 SUB - SAMP LE ID:
 STATION ID:
 SAMP LE DATE:

3150 3409
 00000 00000
 RW-01 RW-01
 04/19/1993 12/19/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	27.6	JB 121
6	ANTIMONY (TOTAL)	UG/L	22.4	J -
2000	BARIUM (TOTAL)	UG/L	2	JB 1.6
N/A	CALCIUM (TOTAL)	UG/L	16800	16300
100	CHROMIUM (TOTAL)	UG/L	3.3	J 5
1300	COPPER (TOTAL)	UG/L	327	67.4
N/A	IRON (TOTAL)	UG/L	24.1	J 47.1
15	LEAD (TOTAL)	UG/L	5	K 4.3
N/A	MAGNESIUM (TOTAL)	UG/L	20900	18100
N/A	MANGANESE (TOTAL)	UG/L	3.4	J 3.4
100	NICKEL (TOTAL)	UG/L	-	3.5 JK
N/A	POTASSIUM (TOTAL)	UG/L	-	470 J
N/A	SODIUM (TOTAL)	UG/L	7480	7560
N/A	VANADIUM (TOTAL)	UG/L	9.6	J 8.1
N/A	ZINC (TOTAL)	UG/L	35.1	J 13.6
N/A	4,4'-DDT	UG/L	0.00085	J -
N/A	ACETONE	UG/L	-	5 B
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	2	B -
N/A	BROMOMETHANE	UG/L	-	0.9 B
100	CHLOROFORM	UG/L	-	0.8 B
N/A	CHLOROMETHANE	UG/L	-	12 B
N/A	DIETHYL PHTHALATE	UG/L	1	B -
2	ENDRIN	UG/L	0.00056	J -
2	GAMMA-CHLORDANE	UG/L	0.00048	B -
0.4	HEPTACHLOR	UG/L	0.0037	B -
5	METHYLENE CHLORIDE	UG/L	2	B 1

AR309144

BOARHEAD FARMS - 1993 & 1994
DETECTED CHEMICALS ONLY & MCLs
RW-07
03-May-95

MCL in UGL	CHEMICAL	01/12/1993					04/19/1993					08/08/1993					02/09/1994				
		UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UGAL	-	-	-	-	3101	10	11.6	11.7	11.7	3201	12.1	B	-	3302	0.9	KJ	-	3391	156 JB
50	ARSENIC (TOTAL)	UGAL	-	-	-	-	00000	-	0.64	0.79	0.79	00000	-	-	-	00000	-	-	-	00000	14.2 K
2000	BARIUM (TOTAL)	UGAL	-	-	-	-	DUP	-	-	-	-	DUP	-	-	-	00000	-	-	-	00000	1.4 JB
N/A	CALCIUM (TOTAL)	UGAL	37400	37800	38700	38700	RW-07	37800	38700	38500	38500	RW-07	40200	J	39100	39100	39100	39100	39100	39100	37500
1300	COPPER (TOTAL)	UGAL	20	18	18.4	18.4	-	18	18.4	19	19	-	15.8	KJ	6.6	6.6	6.6	6.6	6.6	6.6	52.2
N/A	IRON (TOTAL)	UGAL	46	63	25.4	25.4	-	63	25.4	53.3	53.3	-	30.1	J	-	-	-	-	-	-	-
15	LEAD (TOTAL)	UGAL	-	-	0.6	0.6	-	-	0.6	0.4	0.4	-	-	JB	-	-	-	-	-	-	-
N/A	MAGNESIUM (TOTAL)	UGAL	27800	28000	27100	27100	-	28000	27100	26000	26000	-	29500	-	27800	27800	27800	27800	27800	27800	4.7 K
N/A	MANGANESE (TOTAL)	UGAL	-	-	2.7	2.7	-	-	2.7	3.5	3.5	-	4.7	J	-	-	-	-	-	-	24000
100	NICKEL (TOTAL)	UGAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7.4 JK
N/A	POTASSIUM (TOTAL)	UGAL	1080	1000	835	835	-	1000	835	788	788	-	1100	J	-	-	-	-	-	-	46.1 K
N/A	SILVER (TOTAL)	UGAL	-	-	-	-	-	-	-	-	-	-	-	-	6 BJ	-	-	-	-	-	1320 J
N/A	SODIUM (TOTAL)	UGAL	12200	12100	14200	14200	-	12200	14200	14100	14100	-	13500	J	14100	14100	14100	14100	14100	14100	13000
2	THALLIUM (TOTAL)	UGAL	-	-	-	-	-	-	-	-	-	-	-	-	1.1 J	-	-	-	-	-	-
N/A	VANADIUM (TOTAL)	UGAL	13	11	4.6	4.6	-	11	4.6	4	4	-	-	-	-	-	-	-	-	-	1.8 JK
N/A	ZINC (TOTAL)	UGAL	-	7	2.1	2.1	-	7	2.1	0.6	0.6	-	4.7	J	-	-	-	-	-	-	9.5 J
200	1,1,1-TRICHLOROETHANE	UGAL	1.9	2.4	0.9	0.9	-	2.4	0.9	0.8	0.8	-	2	-	0.9 B	-	-	-	-	-	-
N/A	1,1-DICHLOROETHANE	UGAL	0.7	0.9	-	-	-	0.9	-	-	-	-	0.6	J	0.4 J	-	-	-	-	-	-
7	1,1-DICHLOROETHENE	UGAL	0.4	0.5	-	-	-	0.5	-	-	-	-	-	-	0.1 J	-	-	-	-	-	-
N/A	4,4'-DDE	UGAL	-	-	-	-	-	-	-	0.0013	0.0013	-	-	-	-	-	-	-	-	-	-
N/A	ACETONE	UGAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6 B
6	BIS(2-ETHYLHEXYL)PHTHALATE	UGAL	-	-	-	-	-	-	-	2	2	-	-	-	-	-	-	-	-	-	-
N/A	BROMOMETHANE	UGAL	-	-	3	3	-	-	3	-	-	-	-	-	-	-	-	-	-	-	1 B
N/A	CHLOROFORM	UGAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.9 B
100	CHLOROMETHANE	UGAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	17 B
N/A	DIELDRIN	UGAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N/A	DIETHYL PHTHALATE	UGAL	-	-	-	-	-	-	-	0.00031	0.00031	-	-	-	-	-	-	-	-	-	-
2	ENDRIN	UGAL	-	-	1	1	-	-	1	0.8	0.8	-	-	-	-	-	-	-	-	-	-
2	GAMMA-CHLORDANE	UGAL	-	-	0.00036	0.00036	-	-	0.00036	0.00029	0.00029	-	-	-	-	-	-	-	-	-	-
0.4	HEPTACHLOR	UGAL	-	-	0.00045	0.00045	-	-	0.00045	0.00076	0.00076	-	-	-	-	-	-	-	-	-	-
5	METHYLENE CHLORIDE	UGAL	-	-	0.0014	0.0014	-	-	0.0014	0.00047	0.00047	-	-	-	-	-	-	-	-	-	-
1000	TOLUENE	UGAL	0.1	0.1	2	2	-	-	2	0.8	0.8	-	-	-	-	-	-	-	-	-	1 B
5	TRICHLOROETHENE	UGAL	-	0.4	-	-	-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-

AR309145

BOARHEAD FARMS - 1993 & 1994
 DETECTED CHEMICALS ONLY & MCLs
 RW-11
 03-May-95

SAMPLE ID: 3155 3303 3392
 SUB-SAMPLE ID: 00000 00000 00000
 STATION ID: RW-11 RW-11 RW-11
 SAMPLE DATE: 04/19/1993 02/08/1994 12/21/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-		129 BJ
2000	BARIUM (TOTAL)	UG/L	1.9 JB		1.4 BJ
N/A	CALCIUM (TOTAL)	UG/L	23700	27800	24300
100	CHROMIUM (TOTAL)	UG/L	-		8.6 JK
1300	COPPER (TOTAL)	UG/L	227	127	70.3
N/A	IRON (TOTAL)	UG/L	12.6 J		
15	LEAD (TOTAL)	UG/L	0.7 JL		2.6 JK
N/A	MAGNESIUM (TOTAL)	UG/L	37500	38900	33700
N/A	MANGANESE (TOTAL)	UG/L	11 J		1.5 JK
N/A	POTASSIUM (TOTAL)	UG/L	-		971 J
50	SELENIUM (TOTAL)	UG/L	-	1.9 J	-
N/A	SILVER (TOTAL)	UG/L	-	3.8 BJ	-
N/A	SODIUM (TOTAL)	UG/L	18700	22100	18000
2	THALLIUM (TOTAL)	UG/L	-	1.4 J	-
N/A	VANADIUM (TOTAL)	UG/L	9.9 J	14.5 J	12.4 JK
N/A	ZINC (TOTAL)	UG/L	30.4	18.8 LJ	11.9 J
N/A	ACETONE	UG/L	-	-	6 B
100	BENZYL BUTYL PHTHALATE	UG/L	0.6 J	-	-
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	2 B	-	-
N/A	BROMOMETHANE	UG/L	-	-	1 B
100	CHLOROFORM	UG/L	-	0.5 B	0.9 B
N/A	CHLOROMETHANE	UG/L	-	4 B	15 B
N/A	DIETHYL PHTHALATE	UG/L	-	-	-
40	METHOXYCHLOR	UG/L	0.0028 B	-	-
5	METHYLENE CHLORIDE	UG/L	0.8 B	0.4 B	1 B
1000	TOLUENE	UG/L	-	0.2 B	-

AR309146

BOARHEAD FARMS - 1993 & 1994
 DETECTED CHEMICALS ONLY & MCLs
 RW-16
 03-May-95

SAMPLE ID:
 SUB-SAMPLE ID:
 STATION ID:
 SAMPLE DATE:

3106 3156 3207 3410
 00000 00000 00000 00000
 RW-16 RW-16 RW-16 RW-16
 01/11/1993 04/21/1993 08/10/1993 12/19/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-	-	-	144 JB
50	ARSENIC (TOTAL)	UG/L	18	14.6	23.7	19.7 K
2000	BARIUM (TOTAL)	UG/L	-	0.95 JB	-	1.7 JB
N/A	CALCIUM (TOTAL)	UG/L	49500	48000	53000 J	48900
1300	COPPER (TOTAL)	UG/L	12	5.5 J	-	6.4 JK
N/A	IRON (TOTAL)	UG/L	78	10.2 J	14.2 J	82.5 J
15	LEAD (TOTAL)	UG/L	-	0.5 J	-	1.8 JK
N/A	MAGNESIUM (TOTAL)	UG/L	29900	28300	31600 J	27000
N/A	MANGANESE (TOTAL)	UG/L	4	5.2 J	7 J	4.5 JK
100	NICKEL (TOTAL)	UG/L	-	-	8.6 J	-
N/A	POTASSIUM (TOTAL)	UG/L	3810	2120 J	3680 J	3020 J
N/A	SODIUM (TOTAL)	UG/L	19800	20700	16400 J	18900
N/A	VANADIUM (TOTAL)	UG/L	13	2.8 J	-	1.9 JK
N/A	ZINC (TOTAL)	UG/L	14	9.9 J	11.1 J	9.7 J
N/A	ALDRIN	UG/L	-	0.0012 J	-	-
0.5	AROCOR - 1016	UG/L	-	-	0.089 J	-
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	-	4 B	-	-
N/A	BROMOMETHANE	UG/L	-	-	-	1 B
100	CHLOROFORM	UG/L	-	-	-	0.7 B
N/A	CHLOROMETHANE	UG/L	-	-	-	11 B
N/A	DIETHYL PHTHALATE	UG/L	-	0.8 B	-	-
2	GAMMA-CHLORDANE	UG/L	-	0.001 B	-	-
0.4	HEPTACHLOR	UG/L	-	0.00082 B	-	-
5	METHYLENE CHLORIDE	UG/L	0.2 B	2 B	0.6 B	1 B
1000	TOLUENE	UG/L	0.1 B	-	-	-

AR309147

BOARHEAD FARMS - 1983 & 1984
 DETECTED CHEMICALS ONLY & MCLs
 RW-21 *
 03-May-85

CD 1011L
 New ... RW-21

SAMPLE ID:
 SUB-SAMPLE ID:
 STATION ID:
 SAMPLE DATE:

3107 3108 3158 3307
 00000 DUP 00000 00000
 RW-21 RW-21 RW-21 RW-21
 01/12/1993 01/12/1993 04/22/1993 01/24/1994

MCL In UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-	-	-	78.5 BJ
50	ARSENIC (TOTAL)	UG/L	2	2	3.5 JB	4 J
2000	BARIUM (TOTAL)	UG/L	-	-	-	2.9 J
N/A	CALCIUM (TOTAL)	UG/L	18900	18600	22400	22400
100	CHROMIUM (TOTAL)	UG/L	8	9	7.6 J	-
1300	COPPER (TOTAL)	UG/L	111	118	93.1	-
N/A	IRON (TOTAL)	UG/L	64	77	20.6 JB	273
15	LEAD (TOTAL)	UG/L	1	1	0.6 JB	58.6 J
N/A	MAGNESIUM (TOTAL)	UG/L	19000	18800	21600	2.8 J
N/A	MANGANESE (TOTAL)	UG/L	-	-	1.3 JB	21200
100	NICKEL (TOTAL)	UG/L	-	3	6.2 J	-
N/A	POTASSIUM (TOTAL)	UG/L	950	920	819 J	-
N/A	SILVER (TOTAL)	UG/L	-	-	-	840 J
N/A	SODIUM (TOTAL)	UG/L	6850	6680	7440	3.5 BJ
N/A	VANADIUM (TOTAL)	UG/L	19	18	8.1 JB	6800
N/A	ZINC (TOTAL)	UG/L	9	14	15 JB	-
N/A	4,4'-DDT	UG/L	-	-	0.0015 J	52.5
N/A	BHC-ALPHA	UG/L	-	-	0.00094 J	-
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	-	-	2 B	-
100	CHLOROFORM	UG/L	0.2 J	0.3 J	1 B	-
N/A	CHLOROMETHANE	UG/L	-	-	-	3 B
N/A	DIELDRIN	UG/L	-	-	-	80 B
N/A	DIETHYL PHTHALATE	UG/L	-	-	0.00035 J	-
2	GAMMA-CHLORDANE	UG/L	-	-	0.5 B	-
0.4	HEPTACHLOR	UG/L	-	-	0.00025 B	-
5	METHYLENE CHLORIDE	UG/L	-	-	0.00082 B	-
1000	TOLUENE	UG/L	0.1 B	0.1 B	2 B	2 B

* FOR ANALYTICAL DATA FOR NEW RESIDENTIAL WELL SEE RW-108

AR309148

BOARHEAD FARMS - 1993 & 1994
 DETECTED CHEMICALS ONLY & MCLs
 RW-22
 03-May-95

SAMPLE ID:
 SUB-SAMPLE ID:
 STATION ID:
 SAMPLE DATE:

3109 3308 3399
 00000 00000
 RW-22 RW-22
 01/11/1993 02/08/1994 12/20/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-	BJ	112 BJ
50	ARSENIC (TOTAL)	UG/L	10	KJ	9.6 KJ
2000	BARIUM (TOTAL)	UG/L	-	-	1.8 BJ
N/A	CALCIUM (TOTAL)	UG/L	27600	37600	41200
N/A	IRON (TOTAL)	UG/L	42	9.9 BJ	-
15	LEAD (TOTAL)	UG/L	-	-	2.5 KJ
N/A	MAGNESIUM (TOTAL)	UG/L	18900	18100	19300
N/A	MANGANESE (TOTAL)	UG/L	13	16.8	20.3
N/A	POTASSIUM (TOTAL)	UG/L	290	-	476 J
50	SELENIUM (TOTAL)	UG/L	-	1.2 J	-
N/A	SILVER (TOTAL)	UG/L	-	4.4 BJ	-
N/A	SODIUM (TOTAL)	UG/L	30700	32000	30100
N/A	ZINC (TOTAL)	UG/L	-	-	2.1 J
N/A	4-METHYL-2-PENTANONE	UG/L	-	-	0.6 B
N/A	ACETONE	UG/L	-	-	5 B
N/A	BROMOMETHANE	UG/L	-	-	0.7 B
100	CHLOROFORM	UG/L	-	0.9 B	0.8 B
N/A	CHLOROMETHANE	UG/L	-	12 B	8 B
5	METHYLENE CHLORIDE	UG/L	0.2 B	0.9 B	3 B
1000	TOLUENE	UG/L	0.1 B	-	-

AR309149

BOARHEAD FARMS - 1993 & 1994
 DETECTED CHEMICALS ONLY & MCLs
 RW-23
 03-May-95

SAMPLE ID:
 SUB-SAMPLE ID:
 STATION ID:
 SAMPLE DATE:

3160 3210 3310 3400 3406
 00000 00000 00000 DUP
 RW-23 RW-23 RW-23 RW-23
 04/19/1993 08/11/1993 01/25/1994 12/19/1994 12/19/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-	-	46	BJ	126 BJ
50	ARSENIC (TOTAL)	UG/L	18.9	16.5 B	18.2	K	19.8 K
2000	BARIUM (TOTAL)	UG/L	-	-	-	BJ	1.3 BJ
N/A	CALCIUM (TOTAL)	UG/L	45800	47600 J	45100	-	44200
1300	COPPER (TOTAL)	UG/L	-	-	31.6	KJ	1.5 KJ
N/A	IRON (TOTAL)	UG/L	4.4 J	7.3 J	28.3	J	-
15	LEAD (TOTAL)	UG/L	-	-	-	KJ	2.5 KJ
N/A	MAGNESIUM (TOTAL)	UG/L	29700	30000 J	28800	-	26800
N/A	MANGANESE (TOTAL)	UG/L	15.4	19.8	11.7	LJ	16 K
N/A	POTASSIUM (TOTAL)	UG/L	3220 J	3330	2390 J	J	4030 J
N/A	SILVER (TOTAL)	UG/L	-	-	5.8	BJ	-
N/A	SODIUM (TOTAL)	UG/L	12500	11600 J	11800	-	11700
2	THALLIUM (TOTAL)	UG/L	-	-	2.1	LJ	-
N/A	VANADIUM (TOTAL)	UG/L	-	-	-	KJ	-
N/A	ZINC (TOTAL)	UG/L	2.2 J	-	12.5	J	3.4 J
N/A	4-METHYL-2-PENTANONE	UG/L	-	-	-	-	-
N/A	ACETONE	UG/L	-	-	-	B	6 B
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	2	B	16	J	1 J
N/A	BROMOMETHANE	UG/L	-	-	-	B	0.9 B
100	CHLOROFORM	UG/L	-	-	0.7	B	0.7 B
N/A	CHLOROMETHANE	UG/L	-	3	35	B	11 B
N/A	DIETHYL PHTHALATE	UG/L	0.5 B	-	-	-	-
N/A	DI-N-BUTYLPHTHALATE	UG/L	-	-	-	J	3 J
2	GAMMA-CHLORDANE	UG/L	0.00048 B	-	-	-	-
0.4	HEPTACHLOR	UG/L	0.00067 B	-	-	-	-
5	METHYLENE CHLORIDE	UG/L	2 B	0.9 B	0.3	B	2 B
N/A	N-NITROSODIPROPYLAMINE	UG/L	0.5 J	-	-	-	-

AR309150

BOARHEAD FARMS - 1993 & 1994
DETECTED CHEMICALS ONLY & MCLs
RW-25
17-JUN-94

SAMPLE ID:
SUB-SAMPLE ID:
STATION ID:
SAMPLE DATE:

3110
00000
RW-25
01/12/1993

3161
00000
RW-25
04/22/1993

3211
00000
RW-25
08/10/1993

3309
00000
RW-25
01/24/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	61	17.2	JB	57.1 BJ
50	ARSENIC (TOTAL)	UG/L	-	0.8	J	-
2000	BARIUM (TOTAL)	UG/L	-	22.9	J	26.4 J
4	BERYLLIUM (TOTAL)	UG/L	-	0.31	JB	-
5	CADMIUM (TOTAL)	UG/L	-	-	-	4.1 KJ
N/A	CALCIUM (TOTAL)	UG/L	39200	35600	J	49300
100	CHROMIUM (TOTAL)	UG/L	4	-	-	-
N/A	COBALT (TOTAL)	UG/L	-	5.8	J	-
1500	COPPER (TOTAL)	UG/L	34	38	J	90.6
N/A	IRON (TOTAL)	UG/L	214	100	J	74.5
15	LEAD (TOTAL)	UG/L	1	0.7	JB	5.4
N/A	MAGNESIUM (TOTAL)	UG/L	23600	26100	J	30700
N/A	MANGANESE (TOTAL)	UG/L	59	194	-	-
100	NICKEL (TOTAL)	UG/L	-	13.2	J	11.4 J
N/A	POTASSIUM (TOTAL)	UG/L	1120	844	J	1240 J
.50	SELENIUM (TOTAL)	UG/L	-	1	JL	-
N/A	SILVER (TOTAL)	UG/L	-	-	-	7.3 BJ
N/A	SODIUM (TOTAL)	UG/L	5740	6460	-	7250
N/A	VANADIUM (TOTAL)	UG/L	11	4.6	JB	-
N/A	ZINC (TOTAL)	UG/L	10	10.6	JB	-
N/A	ALDRIN	UG/L	-	0.0014	R	15.6 J
N/A	BHC-BETA	UG/L	-	0.0018	R	-
N/A	BENZYL BUTYL PHTHALATE	UG/L	-	0.9	B	-
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	-	4	B	-
N/A	DI-N-BUTYL PHTHALATE	UG/L	-	0.7	B	6 J
N/A	DIETHYL PHTHALATE	UG/L	-	0.5	B	-
N/A	ACETONE	UG/L	-	-	-	-
N/A	CHLOROFORM	UG/L	5.3	-	-	-
100	METHYLENE CHLORIDE	UG/L	0.1	-	-	0.7 J
5	TOLUENE	UG/L	-	-	-	-
1000	BHC - GAMMA	UG/L	0.1	-	B	3 B
0.2	CHLOROMETHANE	UG/L	-	-	-	0.8 B
N/A	CARBON TETRACHLORIDE	UG/L	-	-	-	-
5		UG/L	-	-	-	0.00079 J
			-	-	-	720 0.5 J

AR309151

BOARHEAD FARMS - 1993 & 1994 & 1995
 DETECTED CHEMICALS ONLY & MCLs
 RW-27
 03-May-95

SAMPLE ID: 3112 3213 3445 3446
 SUB-SAMPLE ID: 00000 00000 00000 DUP
 STATION ID: RW-27 RW-27 RW-27
 SAMPLE DATE: 01/12/1993 08/09/1993 01/09/1995

MCL In UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-	54.5	JB	103 JB
2000	BARIUM (TOTAL)	UG/L	-	3.6	J	3.8 J
4	BERYLLIUM (TOTAL)	UG/L	-	1.1	JB	1 JB
5	CADMIUM (TOTAL)	UG/L	2	-	-	-
N/A	CALCIUM (TOTAL)	UG/L	15000	18200	J	16200
100	CHROMIUM (TOTAL)	UG/L	14	14.9	K	13.2 K
1300	COPPER (TOTAL)	UG/L	11	21	KJ	30.5 B
N/A	IRON (TOTAL)	UG/L	100	17.8	J	-
N/A	MAGNESIUM (TOTAL)	UG/L	26500	29300	J	26500
N/A	MANGANESE (TOTAL)	UG/L	3	2	J	4.5 J
N/A	POTASSIUM (TOTAL)	UG/L	210	-	-	-
N/A	SODIUM (TOTAL)	UG/L	11500	12400	J	12300 J
N/A	VANADIUM (TOTAL)	UG/L	22	15.4	J	15.5 J
N/A	ZINC (TOTAL)	UG/L	-	2.7	J	4.6 JK
7	1,1-DICHLOROETHENE	UG/L	-	-	-	1
N/A	ACETONE	UG/L	-	-	B	7 B
N/A	CHLOROMETHANE	UG/L	-	-	B	3 B
5	METHYLENE CHLORIDE	UG/L	-	-	B	4 B
1000	TOLUENE	UG/L	0.1	-	-	-
5	TRICHLOROETHENE	UG/L	-	-	B	2 B

AR309152

BOARHEAD FARMS - 1993
DETECTED CHEMICALS ONLY & MCLs
RW-28
17-JUN-94

SAMPLE ID: 3113 3163 3214
SUB-SAMPLE ID: 00000 00000 00000
STATION ID: RW-28 RW-28 RW-28
SAMPLE DATE: 01/13/1993 04/22/1993 08/13/1993

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	689	702	120 BJ
50	ARSENIC (TOTAL)	UG/L	-	1.2	-
2000	BARIUM (TOTAL)	UG/L	-	17.1	-
4	BERYLLIUM (TOTAL)	UG/L	3	-	-
5	CADMIUM (TOTAL)	UG/L	3	-	-
N/A	CALCIUM (TOTAL)	UG/L	23400	21100	28400
100	CHROMIUM (TOTAL)	UG/L	8	7	5.2 J
1300	COPPER (TOTAL)	UG/L	50	73.4	40 BJ
N/A	IRON (TOTAL)	UG/L	555	614	115
15	LEAD (TOTAL)	UG/L	3	3.8	3.3 K
N/A	MAGNESIUM (TOTAL)	UG/L	7060	4990	18900
N/A	MANGANESE (TOTAL)	UG/L	12	9	15.5 B
N/A	POTASSIUM (TOTAL)	UG/L	630	609	1500 J
N/A	SODIUM (TOTAL)	UG/L	2910	2870	5950
N/A	VANADIUM (TOTAL)	UG/L	16	3.8	6.5 J
N/A	ZINC (TOTAL)	UG/L	47	50	38.1 K
N/A	4,4'-DDT	UG/L	-	0.0022	-
N/A	BHC-DELTA	UG/L	-	0.00031	-
N/A	GAMMA-CHLORDANE	UG/L	-	0.00041	-
0.4	HEPTACHLOR	UG/L	-	0.00084	-
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	-	2	6
N/A	DI-N-BUTYL PHTHALATE	UG/L	-	0.7	-
N/A	DIETHYL PHTHALATE	UG/L	-	0.5	-
100	CHLOROFORM	UG/L	0.1	-	-
5	METHYLENE CHLORIDE	UG/L	-	2	-
1000	TOLUENE	UG/L	0.1	-	-

AR309153

Name - Powes

BOARHEAD FARMS - 1993 & 1994
DETECTED CHEMICALS ONLY & MCLs
RW-34

03-May-95

SAMPLE ID:
SUB-SAMPLE ID:
STATION ID:
SAMPLE DATE:

3115 3166 3217 3312 3402
00000 00000 00000 00000 00000
RW-34 RW-34 RW-34 RW-34 RW-34
01/13/1993 04/21/1993 08/11/1993 02/10/1994 12/20/1994

MCL In UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-	-	-	106 BJ
50	ARSENIC (TOTAL)	UG/L	10	10.1	10.1	11 K
2000	BARIUM (TOTAL)	UG/L	-	1.1	-	1.3 BJ
5	CADMIUM (TOTAL)	UG/L	-	-	JB	-
N/A	CALCIUM (TOTAL)	UG/L	34800	38800	41400	38400
1300	COPPER (TOTAL)	UG/L	-	8.2	-	26.5 K
N/A	IRON (TOTAL)	UG/L	34	24.1	29.6	6 KJ
15	LEAD (TOTAL)	UG/L	-	2.5	-	-
N/A	MAGNESIUM (TOTAL)	UG/L	21400	19800	20800	4.5 K
N/A	MANGANESE (TOTAL)	UG/L	-	13.6	22	18100
100	NICKEL (TOTAL)	UG/L	-	-	8.6	18.7 K
N/A	POTASSIUM (TOTAL)	UG/L	600	-	379	-
N/A	SILVER (TOTAL)	UG/L	-	-	-	648 J
N/A	SODIUM (TOTAL)	UG/L	23100	23400	20900	5.8 KJ
N/A	VANADIUM (TOTAL)	UG/L	11	-	-	20300
N/A	ZINC (TOTAL)	UG/L	-	-	-	20100
N/A	4-METHYL-2-PENTANONE	UG/L	-	-	2.6	-
N/A	ACETONE	UG/L	-	-	-	3.7 J
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	-	11	6	0.5 B
N/A	BROMOMETHANE	UG/L	-	-	-	5 B
100	CHLOROFORM	UG/L	0.1	-	-	-
N/A	CHLOROMETHANE	UG/L	-	-	-	0.7 B
N/A	DIETHYL PHTHALATE	UG/L	-	-	-	0.7 B
40	METHOXYCHLOR	UG/L	-	1	-	6 B
5	METHYLENE CHLORIDE	UG/L	-	0.0073	-	-
1000	TOLUENE	UG/L	0.1	2	0.7	0.036 J
		UG/L	B	B	B	3 B
			-	-	-	0.2 B

AR309154

BOARHEAD FARMS - 1993 & 1994
DETECTED CHEMICALS ONLY & MCLs
RW-35
03-May-95

SAMPLE ID:
SUB-SAMPLE ID:
STATION ID:
SAMPLE DATE:

3116 3167 3218 3313 3413
00000 00000 00000 00000 00000
RW-35 RW-35 RW-35 RW-35 RW-35
01/13/1993 04/21/1993 08/11/1993 01/24/1994 12/22/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-	-	177 BJ	137 BJ
2000	BARIUM (TOTAL)	UG/L	-	-	2.3 J	2.4 BJ
5	CADMIUM (TOTAL)	UG/L	-	-	5.1 K	-
N/A	CALCIUM (TOTAL)	UG/L	18200	21800 J	20100	18800
100	CHROMIUM (TOTAL)	UG/L	4	6.1 J	-	5.3 JK
1300	COPPER (TOTAL)	UG/L	11	21.7 JL	79	9.8 JK
N/A	IRON (TOTAL)	UG/L	227	103 L	162	336
15	LEAD (TOTAL)	UG/L	1	1.3 JL	7	2 JK
N/A	MAGNESIUM (TOTAL)	UG/L	28500	29400 J	29000	25600
N/A	MANGANESE (TOTAL)	UG/L	17	19.3 L	15.6 L	17.9 K
100	NICKEL (TOTAL)	UG/L	-	-	12.7 J	5.6 JK
N/A	POTASSIUM (TOTAL)	UG/L	240	-	218 J	377 BJ
N/A	SILVER (TOTAL)	UG/L	-	-	-	-
N/A	SODIUM (TOTAL)	UG/L	5920	492000 L	14.5 B	-
N/A	VANADIUM (TOTAL)	UG/L	19	10.8 JL	6710	6540
N/A	ZINC (TOTAL)	UG/L	21	16.7 JL	10.3 J	11.1 JK
200	1,1,1-TRICHLOROETHANE	UG/L	-	0.6 J	53.6 J	11.2 J
N/A	4-METHYL-2-PENTANONE	UG/L	-	-	0.7 J	-
N/A	ACETONE	UG/L	-	-	-	0.8 B
N/A	BHC - GAMMA	UG/L	-	-	-	6 B
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	-	0.00091 J	-	-
N/A	BROMOMETHANE	UG/L	-	16	2 J	-
100	CHLOROFORM	UG/L	-	-	-	1 B
N/A	CHLOROMETHANE	UG/L	-	-	0.9 B	1 B
N/A	DIETHYL PHTHALATE	UG/L	-	-	38 B	16 B
N/A	DI-N-BUTYL PHTHALATE	UG/L	-	-	-	-
0.4	HEPTACHLOR	UG/L	-	-	-	4 J
5	METHYLENE CHLORIDE	UG/L	-	0.00093 B	-	-
1000	TOLUENE	UG/L	0.2 B	1 B	0.8 B	2 B
				0.3 J	-	-

AR309155

BOARHEAD FARMS - 1993 & 1994
DETECTED CHEMICALS ONLY & MCLs

RW-52 *

03-May-95

SAMPLE ID: 3171 3222 3314
SUB-SAMPLE ID: 00000 00000
STATION ID: RW-52 RW-52
SAMPLE DATE: 04/19/1993 08/10/1993 02/08/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	15.6	JB	-
50	ARSENIC (TOTAL)	UG/L	12.2	-	8.2 KJ
2000	BARIUM (TOTAL)	UG/L	2.7	JB	-
N/A	CALCIUM (TOTAL)	UG/L	36800	-	43300
1300	COPPER (TOTAL)	UG/L	10.3	J	-
N/A	IRON (TOTAL)	UG/L	17.9	J	-
15	LEAD (TOTAL)	UG/L	2.2	J	-
N/A	MAGNESIUM (TOTAL)	UG/L	19600	-	21500
N/A	MANGANESE (TOTAL)	UG/L	32.6	-	13.6 J
N/A	POTASSIUM (TOTAL)	UG/L	2170	J	1360 J
50	SELENIUM (TOTAL)	UG/L	-	-	1.2 LJ
N/A	SODIUM (TOTAL)	UG/L	25500	-	23600
N/A	VANADIUM (TOTAL)	UG/L	5.9	J	-
N/A	ZINC (TOTAL)	UG/L	7.9	J	57.5
N/A	ACETONE	UG/L	23	J	-
0.2	BHC - GAMMA	UG/L	-	-	-
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	3	B	-
100	CHLOROFORM	UG/L	0.6	B	4 B
N/A	CHLOROMETHANE	UG/L	-	-	51 B
N/A	DIETHYL PHTHALATE	UG/L	5	B	-
N/A	DI-N-BUTYL PHTHALATE	UG/L	0.8	B	-
2	GAMMA-CHLORDANE	UG/L	0.00034	B	-
0.4	HEPTACHLOR	UG/L	0.0044	B	-
5	METHYLENE CHLORIDE	UG/L	0.6	B	2 B
N/A	PHENOL	UG/L	2	B	-
1000	TOLUENE	UG/L	2	-	0.2 B

AR309156

* FOR ANALYTICAL DATA FOR OLD RESIDENTIAL WELL SEE RW109

17-JUN-94

SAMPLE DATE:

04/22/1993

08/12/1993

UNITS	CONCENTRATION	CONCENTRATION
UG/L	17.5	JB
UG/L	9.9	J
UG/L	0.55	JB
UG/L	0.31	JB
UG/L	41700	44400
UG/L	7.7	J
UG/L	7.4	JB
UG/L	0.5	JB
UG/L	20500	20300
UG/L	28.5	14
UG/L	437	567
UG/L	1.1	J
UG/L	11700	12400
UG/L	3.3	JB
UG/L	10.5	JB
UG/L	0.00034	J
UG/L	0.00087	B
UG/L	0.0011	B
UG/L	4	B
UG/L	0.6	B

Afume-Velasco

BOARHEAD FARMS - 1993 & 1994
 DETECTED CHEMICALS ONLY & MCLs
 RW-74
 17-JUN-94

SAMPLE ID:
 SUB-SAMPLE ID:
 STATION ID:
 SAMPLE DATE:

3134
 00000
 RW-74
 1/13/1993

3179
 00000
 RW-74
 04/21/1993

3227
 00000
 RW-74
 08/21/1993

3319
 00000
 RW-74
 02/08/1994

RW 64
 PCE at Rwg/l

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION	CONCENTRATION	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	-	21.9	JB	102 BJ
50	ARSENIC (TOTAL)	UG/L	-	1.2	JB	-
N/A	CALCIUM (TOTAL)	UG/L	55500	41100	-	42700
100	CHROMIUM (TOTAL)	UG/L	3	4.1	J	-
1300	COPPER (TOTAL)	UG/L	46	50	K	56.4
N/A	IRON (TOTAL)	UG/L	117	20.8	J	-
15	LEAD (TOTAL)	UG/L	1	0.7	JB	-
N/A	MAGNESIUM (TOTAL)	UG/L	33400	32900	JB	33600
N/A	MANGANESE (TOTAL)	UG/L	58	2	JB	-
100	NICKEL (TOTAL)	UG/L	-	-	J	-
N/A	POTASSIUM (TOTAL)	UG/L	1320	1460	J	910 J
50	SELENIUM (TOTAL)	UG/L	-	-	-	1.4 LJ
N/A	SODIUM (TOTAL)	UG/L	6140	7380	J	7600
N/A	VANADIUM (TOTAL)	UG/L	18	9.9	J	-
N/A	ZINC (TOTAL)	UG/L	16	51	J	16.7 LJ
N/A	ALDRIN	UG/L	-	0.0011	B	-
0.4	HEPTACHLOR	UG/L	-	0.0031	B	-
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	-	1	B	-
N/A	DIETHYL PHTHALATE	UG/L	-	0.6	B	-
5	METHYLENE CHLORIDE	UG/L	-	0.5	B	0.5 B
1000	TOLUENE	UG/L	0.2	-	-	-
N/A	DIELDRIN	UG/L	-	-	-	-
N/A	CHLOROMETHANE	UG/L	-	-	-	9 B
100	CHLOROFORM	UG/L	-	-	-	0.7 B

AR309158

Name - Lewis, Felder

BOARHEAD FARMS - 1993 & 1994
 DETECTED CHEMICALS ONLY & MCLs
 RW-79
 17-JUN-94

SAMPLE ID: 3229
 SUB-SAMPLE ID: 00000
 STATION ID: RW-79
 SAMPLE DATE: 08/12/1993

SAMPLE ID: 3322
 SUB-SAMPLE ID: 00000
 STATION ID: RW-79
 SAMPLE DATE: 02/09/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION	CONCENTRATION
N/A	CALCIUM (TOTAL)	UG/L	21700	21100
100	CHROMIUM (TOTAL)	UG/L	11.3	-
1300	COPPER (TOTAL)	UG/L	119	198
N/A	IRON (TOTAL)	UG/L	18.6	-
N/A	MAGNESIUM (TOTAL)	UG/L	26300	25200
N/A	MANGANESE (TOTAL)	UG/L	14.2	12.6
N/A	POTASSIUM (TOTAL)	UG/L	371	-
N/A	SODIUM (TOTAL)	UG/L	3740	4300
N/A	ZINC (TOTAL)	UG/L	104	14.5
6	BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	4	-
N/A	CHLOROMETHANE	UG/L	-	6
5	METHYLENE CHLORIDE	UG/L	-	0.4
100	CHLOROFORM	UG/L	-	0.4

AR309159

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BOARHEAD FARMS - 1994
 DETECTED CHEMICALS ONLY & MCLs
 RW-108 *
 03-May-95

SAMPLE ID: 3407
 SUB-SAMPLE ID: 00000
 STATION ID: RW-108
 SAMPLE DATE: 12/22/1994

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION
N/A	ALUMINUM (TOTAL)	UG/L	143 JB
50	ARSENIC (TOTAL)	UG/L	9.3 JK
2000	BARIUM (TOTAL)	UG/L	1.7 JB
N/A	CALCIUM (TOTAL)	UG/L	35500
1300	COPPER (TOTAL)	UG/L	54.3
N/A	IRON (TOTAL)	UG/L	29.1 J
15	LEAD (TOTAL)	UG/L	2.3 JK
N/A	MAGNESIUM (TOTAL)	UG/L	20800
N/A	MANGANESE (TOTAL)	UG/L	24.4 K
100	NICKEL (TOTAL)	UG/L	1.7 JK
N/A	POTASSIUM (TOTAL)	UG/L	653 J
N/A	SODIUM (TOTAL)	UG/L	17200 J
N/A	VANADIUM (TOTAL)	UG/L	1.4 JB
N/A	ZINC (TOTAL)	UG/L	39.9 J
N/A	ACETONE	UG/L	5 B
N/A	BROMOMETHANE	UG/L	1 B
100	CHLOROFORM	UG/L	1 B
N/A	CHLOROMETHANE	UG/L	23 B
5	METHYLENE CHLORIDE	UG/L	2 B

AR309160

* FOR ANALYTICAL DATA FOR OLD RESIDENTIAL WELL SEE RW21

BOARHEAD FARMS - 1993
DETECTED CHEMICALS ONLY & MCLs
RW-109 *
03-May-95

SAMPLE ID: 3120
SUB-SAMPLE ID: 00000
STATION ID: RW-109
SAMPLE DATE: 01/13/1993

MCL in UG/L	CHEMICAL	UNITS	CONCENTRATION
N/A	CALCIUM (TOTAL)	UG/L	32600
100	CHROMIUM (TOTAL)	UG/L	4
1300	COPPER (TOTAL)	UG/L	67
N/A	IRON (TOTAL)	UG/L	43
15	LEAD (TOTAL)	UG/L	1
N/A	MAGNESIUM (TOTAL)	UG/L	45200
N/A	MANGANESE (TOTAL)	UG/L	12
N/A	POTASSIUM (TOTAL)	UG/L	970
N/A	SODIUM (TOTAL)	UG/L	12300
N/A	VANADIUM (TOTAL)	UG/L	20
N/A	ZINC (TOTAL)	UG/L	12
1000	TOLUENE	UG/L	0.1 B
5	TRICHLOROETHENE	UG/L	0.2 J

AR309161

* FOR ANALYTICAL DATA FOR NEW RESIDENTIAL WELL SEE RW52

OLD well
at Fasano Residence